The Builder.

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The Industrial Outlook of 1874.

EVERY member of the great family of industry may find it useful, in the early weeks of a new year, to take a glance at the outlook of the coming months, as regards the probable future of the workman. It so happens, at the commencement of 1874, that an unusual number of statistical statements have made their appearance. Little scraps that occupy three or four inches in the corner of a newspaper, may often represent weeks of conscientious work, on the part of numerous and intelligent men. The essence of their toil is at last distilled into these few drops of condensed knowledge. Too frequently are they glanced at, with only half-awakened interest, or read with some fleeting expression of surprise. But to read, mark, learn, and inwardly digest, is given to few. Perhaps it is rather as furnishing the thoughtful public writer with data than in any other manner, that statistical communications to the public journals have the most available value.

The class of work which is most fully illustrated by recent investigation is that of the agriculturist. Let not, however, the builder, the engineer, or the manufacturer of any description, think that he is not directly interested in the subject. Whatever be the temporary disturbances that may seem, for a time, to pit class against class, nothing is more certain than the fact that the prosperity of all the industrial classes is intimately connected, and thoroughly interdependent. We may go further, and refer to the ancient and unchanged wisdom that found a voice in the fable of "The Belly and the Members." But our present purpose is to deal with the industrial element.

It is true that the effect of recent legislation, or we may say, with deeper truth, the effect of the application of the steam engine to locomotion, and of the great stimulus that has thus been given to international communications of all kinds, has been to render the working-classes of England far less dependent upon the farmer, and the soil, than was the case half a century ago. The price of the quartern loaf is no longer entirely dependent on the English harvest. Still, a bounteous or a stinted yield, from our own acres, makes a very appreciable difference to the consumer. But while, from year to year, the area of supply is broadened, the main principles of mutual dependence remain unchecked. Three centuries ago there was, perhaps, less rapid and effective sympathy between Cumberland and Cornwall than now exists between London and Calcutta. From whatever source we draw our supply of breadstuffs, the same principles, in the long run, regulate their production, that prevailed when each county looked to its own home-raised crops, cultivated by its own home-produced labour, as the measure of its yearly wealth. Thus, while primary principles must always regulate the economical circle of consumption and production, although the introduction of new elements may for a time veil their action, we can tell whither the whole course of industry tends. And not only so, but we can never be sure where the great underlying principles may unexpectedly assert their power. In this unsleeping efficacy lies perhaps the main difference between the action of the laws of nature, and that of the laws made by man.

When, therefore, we regard the condition and the outlook of the agricultural labourer, we regard not only that which ultimately, and as matter of theory, affects, and indeed underlies, the whole organisation of industry, but something more. We are considering an element of the national life and wealth, which may, at any moment, come into the front rank. It is, therefore, a matter of the gravest interest for every owner, and for every occupier,—that is to say employer,—of labour.

A further consideration shows the great economical importance of the state of agricultural labour amongst ourselves. It is this. The relations of labour to the soil have a limit that can be measured. They can be gauged by statistics. Knowing accurately the area of Great Britain, and knowing more, year after year, of the soil, climatic peculiarities, and productive power of every portion of that area, we are also better enabled to ascertain what the island is capable of producing, and, which is the point at which we are now arriving, we are enabled more and more clearly to see what is the most productive relation that can exist between the soil and the labour bestowed upon it. That is to say, we see what is the best proportion, economically considered, between territory and population, not including in that estimate the urban population of great centres of manufacturing industry.

The point where the relation between the numbers of the agricultural population and the acreage of land under corn cultivation has always been most delicately balanced is the harvest. We must consider that the bulk of the corn-crops of England, in order to be saved in fair condition, must be cut within the space of a fortnight. Out of this time two Sundays have to be deducted; and, unfortunately, we can hardly hope for an average of more than nine or ten days at most, out of the fourteen, as rainless. Thus some seven or eight days of the time most precious for harvest is as much as we can at all anticipate as likely to be at our command.

We may take the average area of land under corn crops in England, in round numbers, at 7,500,000 acres, which breadth is under the mark. Harvesting-time in 1873, in Wiltshire, found the farmers paying 10s. 6d. per acre for reaping alone. This is for wheat. Making a deduction for other crops, but bearing in mind the tendency of prices, we shall be safe in estimating the cost of reaping our corn at 7s. 6d. per acre, for 7,500,000 acres. This gives an expenditure little over 2,800,000*l.*, or 280,000*l.* per diem, distributed over ten days. The army of reapers necessary for the effort will thus appear to be very large. The supply on which the farmer was formerly able to count, of Irish labour, is now no longer forthcoming. Machinery has done much, and will, year by year, do more. But still, the whole available population of the rural districts, men, women, and children, turns out to aid in the harvest.

Not only is the cost a matter of sufficient magnitude to render any appreciable percentage of saving an object of national importance; but the effect, on the *status* of the agricultural labourer, of this pressure at a particular season of the year, is disastrous. In order to have hands at need, the agriculturist is driven to encourage the production, and the keeping up of a rustic population, for which the greater part of the year does not afford enough occupation to maintain them in any degree of decent comfort. The small weekly wages are professedly eked out by the harvest money. It might seem to the labourer to be rather an Irish way of helping him to better his position by stopping his main source of exceptional benefit. But, nevertheless, it is plain that such will be the case. It is plain, moreover, that such is the certain tendency of improved reaping-machinery. Violent exertion for a few days, pulling on the vital energy, and succeeded by sluggish half-work, is a matter calculated, in every way, to injure the labourer. Steady work and steady pay is the arrangement which enables him to better his condition.

In the wheat-growing districts of New Zealand, we learn from the letter of a colonial farmer, reaping by hand is now unknown. A reaping-machine is as necessary a part of the plant of the farmer as a plough. If his holding be too small to require one, he joins with a neighbour in the purchase of the indispensable aid to their work. Mr. Caird tells us that the "reaper" does the work of ten men, and does it better. The supply of these machines is now actively in operation in this country. One celebrated maker alone turns out 6,000 in the year. Mr. Caird estimates that the entire corn crop of this country could be cut down in ten days, by 80,000 reaping-machines, each cutting an average of ten acres per day. This is one-fifteenth above our preceding estimate of area. The cost of the labour added to the service of the machine we have not found stated. But a pound a day would pay for two horses and two men, and allow a return on the cost of the machine into the bargain. We should thus have our corn cut, the carrying remaining as before, for two shillings an acre, in lieu of 11s. 6d. per acre; or a saving of eleven fifteenths of the sum we have before cited:—more than two millions sterling in the pockets of the farmers.

It may be urged, in reply, that this great economy is effected at the cost of the labourers of England. There is, of course, some truth in the observation, in the abstract. It is the old crow that labour has always had to pluck with machinery. No great benefit has been conferred on mankind, without inflicting some present suffering at the time of its introduction. The printing-press was a terrible blow to the scrivener. No doubt many cases of personal suffering occurred at the time of its introduction; but improvements of this nature, good in themselves, have a wonderfully subtle power of compensation for the injury they cause. Not only do we find, that, if we take decade by decade, the labour called into activity by the new arm supplied to industry exceeds the amount of that which it displaced; but, even from year to year, the disturbance will be less than might be fairly anticipated. If we take an illustration from the increased demand for horses that followed close upon the anticipated ruin of the horse-master by the withdrawal of the mail and stage coach traffic from long lines of road, on the opening of our great railways, we shall come to the conclusion that for the two millions sterling that the farmer economises in the cost of reaping, he will be likely to spend four or five millions or more in regular, permanent, remunerative agricultural work.

The absolute money-saving to be effected by the use of the steam-plough will not, at first sight, appear so considerable as in the case of the "reaper." But the actual value to the country is higher; moreover, it is desirable. It is something more than saving. The advantage

is two-fold. First, there is the fact that the work of breaking up the soil is far more thoroughly effected by the steam-plough than by the time-honoured implement, to which it was a good old toast that bade God speed it. Secondly, and yet more important, is the question of time. It has not, hitherto, been in the power of the farmer to concentrate labour upon ploughing with anything like the efficiency with which, since the days of Æsop, it has been concentrated upon harvest. Mother earth has demanded time, as well as toil, to allow of the tillage of her surface. The best efforts of man, horse, and plough have been limited, apparently, by Nature herself, and spread out over weeks, and even months. This has been changed by the magic wand of the "drudging goblin." The share can now almost race the sickle; and broad fallows lie upturned to sun and air that, not a week before, were clothed with the nodding ears of the corn crop.

Mr. Caird estimates that a steam plough capable of ploughing ten acres a day will displace the labour of eight men and twenty horses, and do the work far more effectively. It is not clear whether this estimate means a net gain of so much labour; but, if so, very exceptional cases must be cited The steam-plough needs the tendance of at least four men, besides the cart, horse, and man required by way of tender for the supply of water and fuel. Ploughing can be done by horse for ten shillings an acre. Even if we take the steam-plough's work to be doubly as effective as that of the horse-plough, we do not approach such an economy as that claimed. Mr. Mechi gives the cost of "mashing up the stubble" as 4s. 7½d. per acre. To this he has added horse-power in drilling and harrowing, amounting to 3s. an acre more. No doubt the value of the work done by the steam-plough is far more than that of the horse-ploughing, at 10s. an acre, still we do not see our way to a confident estimate of a greater saving, by the use of the steam plough, in money expenditure, than 5s. per acre. But even this comes to two millions sterling per annum on Mr. Caird's estimate of acreage!

The effect of these two great changes on what may be called the limiting elements of agricultural labour cannot fail to be very important. The number of the population dependent on agriculture for their support is cited, from the last census, at 1,590,000 persons. To estimate their average income is not easy; as, on the one hand, very small "persons" must be included in the count, and, on the other hand, the degree of luxury of dress and habit which has nearly banished the frugal and homely charm that formerly invested the same house, draws its support directly from the soil. The twenty-two millions of acres (keeping still a little under the mark) of land cultivated in England have been estimated to receive annual labour to the low amount of 15s. per acre per annum. This gives an outlay of sixteen millions and two-thirds sterling. If we suppose the same estimate (which, we think, is that of Mr. Mechi) to apply to Great Britain, twenty-nine millions of cultivated acres will demand an annual expenditure of twenty-one millions and three-quarters sterling. In this, however, must be included an appreciable sum for the expenses of horse keep. We shall be glad to receive from any of our agricultural readers any positive information as to the relative outlay incurred in human and in horse labour. Approximately speaking, if we attribute 3*l*. out of the 13*l*. per head, which the above figures give, to the cost of animal power, we shall probably err on the side of leaving too high a rate for the labourer. Again, if we were to take each labourer's family as containing four persons "engaged in the cultivation of the land," taking no heed of those too young, or too feeble, to be thus enumerated, we should find the resulting average of about 15s. per week for each married labourer, including in that rate the minor earnings of wife and children, possibly, we fear, not much above the mark.

If from the 21,750,000*l*.,—which is the amount arrived at, on the estimate of 15s. per acre,—per annum, we deduct 2,000,000*l*., which may be saved by harvesting by machinery, and 1,000,000*l*., which may be saved by the use of the steam-plough, we find the money demanded from the farmer, in the course of the year, to be reduced to 18,750,000*l*.; or, in other words, we find one-seventh of the total number of agricultural labourers displaced (on paper) by the steam-engine. But the currency, or what is more to the point the net profit, to the farmer, will probably more than double the actual money saving. Looking at the three sources of advantage, this estimate will appear low. First, there is the avoidance of damage and loss from bad weather in harvest time, that will be insured by full command of a rapid power of ingathering on the few fine days. Secondly is the increased fertility of the crop, from the more effective upturning of the earth by the steam-plough. Thirdly is the great advantage obtained in purifying the land from weeds, and in certainty of saving the winter corn at the best time, by the increased rapidity of the process of ploughing.

Thus, without any extravagant or heroic changes, were the farmers of this country to be fully "found," in the course say of the opening year, in reaping and ploughing plant, they would be some five or six millions sterling the better for it by Christmas. It is not to be assumed, we trust, for a moment, that this sum would mainly go to swell the luxury of their habits. So far as it accumulated in the bank, it would be making up for the chief inconvenience of the farmer—want of capital. But there would be a far more fructifying and lucrative mode of employing this capital than any bank could offer. That is the most precious and self-multiplying of capital that is utilised in what a chemist would call its nascent state. If the tradesman has found out that small profits on quick returns are every way preferable to a higher rate of profit on a more sluggish rate of receipt, yet more forcibly does this truth apply to the producer—most of all, perhaps, to the agricultural producer. Thus, the ordinary principles that regulate human action would lead to the following result. The spurt of labour at harvest would be no longer necessary. The farmer would have no inducement to encourage the maintenance of a partially employed labouring population. He would employ only so many men as he wanted, all the year round, for steady work. He would thus be able to pay them better wages. He would find, on making the experiment, that it paid *him* far better to do so. And paying at least seven shillings to the man to whom he now pays six (and by and by, as he learned from experience, paying him more likely ten) he would still find himself, so far gaining on his former position as to be able, year by year, to encounter those mighty, though simple, duties of drainage, irrigation, and general industrial improvement, of his holding, which would lead, steadily but surely, to the doubling or the tripling of his returns.

Looking forward (unless pestilence, war, or evil legislation unfortunately check the natural course of events) to the fulfilment, sooner or later, of these practical hopes, we yet think that the recent light that has been thrown on the condition of the emigrant workman is of great value. The upshot of the thing we take to be that the young, hearty, industrious, able agricultural labourer may secure, in more parts of the world than one, a rapidly-earned and comfortable independence. But this is the very man whom statesmanship should seek to keep at home. His arms and industry are the very fountain of national wealth. Against the golden temptations held out to him, the cost has to be counted. To many, the severing of all local ties of relationship, friendship, and habit, is in itself no slight price to pay. Still more important is the immense incertitude of the venture. It is true that there exist such spots as we have named, the very Paradise of industry. But they are not the spots to which the labourer is called by the advertiser. For one Paradise there are ten pitfalls. Deadly climate, arid soil, swamp, fen, morass, uncleared and impenetrable forest; swarms of mosquitoes, with active venom that makes life a burden, and causes a strong man to cry like a child; deadly snakes, lions and panthers; wild hogs, that come down punctually as the crops begin to ripen; vast, lonely distances, which surround the settler as with an iron chain. All these are far more frequent than the brighter prospects of the case. And to whom is the intending emigrant to trust? How very few of those who say, "Come," have any real advantage to offer! The good wine of the really prosperous settlement does not need the bush of the emigration agent.

The upshot is, that a better time is at hand for the industrious man in old England, and that he will do better cheerfully to look forward to it than to transfer himself to a foreign soil, unless he knows, from personal friends, the exact character of the spot to which he thinks of emigrating.

GENERAL EXHIBITION OF WATER-COLOUR DRAWINGS, DUDLEY GALLERY.

The custom of newspaper notice for recurring picture exhibitions will become one more to be honoured in the breach than the observance presently, when all the news to be derived from their very frequent appearances is really confined to the advertised announcements of such or such a gallery being open for the delectation of a shilling-paying public. That fabled example of steady determination and of a by no means common taste for reading, who went up and down column right through Johnson's Dictionary to the very end of it, and closed the book with the meek remark that he "really thought it rather dry reading," should get a volume or two of some exhibition catalogues for the last dozen years past, and make the world the wiser by giving his opinion of these.

A detailed list of the 670 items that make up the show of drawings at the Egyptian Hall just now is about as interesting to those not intent upon buying, as the description of numbered lots in an auctioneer's catalogue would be to any one not in immediate want of more chairs, tables, couches, ottomans, or old masters, that he is fortunate enough to be already provided with; and there are few instances where this printed promise is at all exceeded by performance. Ten years ago the Dudley Gallery inaugurated quite a new celebrity of its own by a great success which, if it has not remained quite in succession, it would yet be unjust to say does not at times return, though it is more than ever apparent that the modest prefix "general" has become in its appropriateness the honest admission that there is nothing in particular to destroy uniformity in the character and quality of the pictures to be found here now from time to time. In vain you may look for the solid impasto work that has heretofore given the notion of what Mr. P. Calderon, R.A., entertains of water-colour; or for the Mediæval embodiments of clever Mr. H. S. Marks's (A.R.A.) fancies; or for the beautifully-finished heads always to be associated with Mr. Burton's name as a painter; or for the highly-coloured classic romances that Mr. E. Burne Jones has been wont to evoke great praise, and sometimes astonishment by; for neither they nor their like are to be found here. The pretty little damsel standing on "The Terrace" (205) recals better things done by Mr. G. D. Leslie, A.R.A.; and things of a past date done by Richard Westall and others, who never shared the charm by which Stothard managed to make them valuable.

However, amongst what there is to be found, are several nicely-taken idealised portraits, such as "Adeline" (12), by Mr. W. Gale, which would look the better for a little less affectation; "Rubinella" (34), more strongly painted by Mr. C. Bellay; the lovelorn lady, "Dost thou love me, my beloved?" (57), so fittingly surrounded with green and yellow hues, by Miss H. J. Miles; "The Young Widow" (176), who it may be guessed will never again be represented by Mr. J. M. Jopling under such woebegone aspect; but will doubtless come before us as "The Happy Wife;" "Giuglia" (253) and "Helena" (485) though somewhat hyperbolically pretty, by Mr. E. Tayler; and Mr. C. S. Lidderdale's pleasant-looking little "Weary" one (263). Mr. J. Parker has drawn a head so well, and coloured it so brilliantly, that the more is the pity that the figure it tops should be so disproportionately small (240); and Miss E. Martineau's elaborated study of "A Young Greek Woman" (295), suffers in a lesser degree from the same failing, though it is treated with a scholarly apprehension of a more exalted class of art than any other drawing in the room can show. Miss J. Russell's view of how a very young woman should be studied, though antipathetic to the severe and classic ("Baby Bunting," 192), would best satisfy mammas and papas, no doubt; for Miss Russell seems to appreciate the bright merry tint a pretty, lovable little daughter gives to a home.

There are portraits proper — veritable likenesses, too, to be included when speaking of what is most noticeable here: by Mr. E. J. Poynter, A.R.A. (84), and by Mr. J. C. Moore (224, 333, and 348), that are as enunciative of the artists' styles as they can possibly be of other individual distinctiveness; and Mr. F. J. Skill has sent some of his "Breton Children playing," at "Cat's Cradle, in English" (20); Mr. Heywood Hardy has gone to a new field of labour, and in "Field Labour in Upper Egypt" (60)

shows how the local agriculturist has need to combine the agility and practice of the acrobat with the more prosaic and less profitable pursuit of cultivating corn for others to eat: the performance having quite an Islington Hall suggestiveness about it, enough to induce Mr. Hardy to catch his camel, and the accomplished pedestrian professor who balances himself on the rough revolving wooden cylinders whilst driving his eccentric locomotive—steering his ship of the desert—it is quite likely that Londoners may have an opportunity of seeing for themselves how it can be done, as it is not very clearly demonstrated in the picture. It is very much to be hoped that in Egypt they have long ago adjusted all knotty questions betwixt capital and labour; for to think that this nimble-limbed india-rubbery muscled "Fellah" is paid for piece-work and not by time, is quite sufficient to spoil all enjoyment of the many pretty pictures yet to be noticed now, and that would be a pity.

"The Gentle Craft" (41), by Mr. J. Parker, of course means fishing; in the mildest form, then, it is an agreeable Walker-Herkorner sort of reflection that sunshine beautifies very homely and ordinary objects. Mr. R. T. Waite evidently thinks—and how many think with him—that you cannot do better, and might do worse, than see nature as Mr. Topham has been showing her since long ago: "The Spring" (76) will prove this. Mr. E. F. Brewtnall depicts a provincial "Sir Peter" gathering up the bouquets that his teasing wife, by her quarrelling or her "make up," has wrested from the applauding hands of an admiring audience; "Called before the Curtain" (128), is at once praise for the actress, and for him who is the scene painter. "A Ticklish Job" it must be for Mr. S. Lucas's Cavalier, with idolatrous love for the symmetrical shape of his moustache, to shave with the left hand (200): this clever little sketch is one of the best of similar slight things to be found in number.

"The Gillie's Pipe," by Mr. J. J. Richardson (341), gives local habitation and a name to airy something, — a well-arranged aggroupment of Scottish sportsmen on the moors, with dogs and guns, and game to betoken a knowledge of how to make good use of them. This is a very carefully finished drawing, conveying a strong impression of truthfulness that arrests attention amongst many works, even, that also speak of truth; on the other hand, though Mr. T. Green's well-studied and cleverly-executed representation of the courtyard of an old inn, with the stage-coach just arrived at "The End of the Journey" (373), attracts attention from its size and the evident care bestowed upon its production, it lacks vitality and fails to interest the spectator from a coldness and want of character in the *dramatis personæ* that no amount of finish can atone for.

"The Vale of Health, Hampstead," by Mr. J. Macbeth, with an aged-invalid in a donkey-chaise, attended by sickly-looking children, and a morose or moralising donkey-boy (398), can bring no pleasure nor profit to anybody. An Interior with two young ladies at "Evening Practice" of piano-playing and singing (519), is a far more meritorious if less pretentious display of talent.

Two single-figure studies, by M. L. Leloir, of Eastern women, "Pretty Cockatoo" (549), and "A Moorish Lady" (550), are singularly forcible and deftly done, though rather confused by excess of ornamental appendages.

"After Dark" (604), by Mr. Lionel Smythe, and "Interrupted" (617), by Mr. S. Lucas, again, are another couple of noticeable, though slight little pictures.

We find we have marked in the catalogue Mr. T. R. Macquoid's "Study of Colour" (6), composed principally of some flags or irises in a Japanese jar, and a similar arrangement, by Miss H. C. Coleman (143), one of many of her exquisite studies of flowers and still life that are a great addition to the collection's best attractiveness; "The Mill-stream" (25), and two sunny bits of country scenery,—"Ricks" (541) and "A Study" (560),—by Mr. Wilmot Pilsbury; "Autumn: Twilight" (48), by Miss K. M. Goodwin; "Beccles, Suffolk," by Mr. A. Griffiths; "The Still Pool," by Mr. J. J. Curnock; "Cover Wood near Shere" (93) and "Felday" (95), by Mr. F. Walton; "Return of the Beer Fleet" (96), and other drawings, by Mr. H. Macallum; "A Study: Rome" (106) of a fountain and orange trees, by Mr. H. M. Marshall; "A roused Pet (113) of a puppy-dog, by Mr. J. W. Bottomley; a sleepy sentinel "On Watch" (116), by Mr. J. H. Barnes; "Ardlamont Point," by Mr. Macallum again; "The Abbey Brewery, Abingdon" (142), for its simple truthfulness, by Mr. W. Stocks, and "Rocks at Conol-Marten, near Ilfracombe" (153), by the same; "Beer Head, South Devon" (166), by Mr. J. O. Long; "Gateway to the Wartberg" (190), and other drawings, by Mr. A. Ludovici; "A Bit of the Tiber" (193), by Mr. J. Knight; "Hastings from the Tarry Field" (214), by Mr. C. Earl; "House of the Sheikh El Mahdi, Cairo" (222), by Mr. F. Dillon; Mr. W. Field's "River" (245); "Bugnall Banks, Yorkshire" (261), by Mr. C. H. Kemplay; "The Orme's Head, from Conway" (270), by Mr. F. Talfourd; "Florence, from Albergo d'Arno" (314), by Mr. A. Severn; "The Mill at Rest" (349), by Mr. E. H. Fahey; "The Wintry Sea" (417), by Mr. E. Ellis: "Mountain Torrent, Ross-shire" (425), by Mr. A. W. Weedon; some very agreeable and promising works, by Mr. A. C. H. Luxmoore; and a singular drawing of "Orchardleigh Ponds, Somerset" (436), by Mr. A. Parsons, which, weak enough to be thought at first decidedly weak, has some very strong points in its natural colour and general appearance.

A MANUAL OF PUBLIC HEALTH.*

A SMALL work has just appeared that is likely to prove useful to the large staff of medical officers and sanitary inspectors called into existence by the Public Health Act of 1872. It is a manual grouping together as much information as could be gathered by three authors, from three different points of view, concerning the duties of these officers, and the bearing of the law upon them. A fourth eye has superintended the execution of the task, and the work thus perfected is announced as edited by Mr. Ernest Hart. The authors, who bear good names, have doubtless aimed at being as comprehensive as possible, yet some few omissions have been made that might have been avoided.

The subject has been investigated in its legal, medical, and chemical aspects; and the work is divided into three parts, to meet this arrangement. In the first the central authorities, the local authorities, officers and powers of local authorities, roads and ways, sewers, water-supply, public and private lighting, and nuisances, are discussed in very much the same terms as in the Acts of Parliament in which these matters are treated; and three indices are furnished to the statutes pertaining to public health, powers, and penalties. In the second, routine duties, refuse matters, conservancy plans, water-carriage system, water-supply, epidemic diseases, overcrowding, ventilation, and inspection of trades, are touched upon in a not dissimilar manner. In the third, the adulteration of food, commencing with the amount of impurities to be found in the water of the different London water companies, and the composition of the air, is discussed with reference to its influence on the public health. All this is, of course, exceedingly good, but it might have been better. Officers consulting this work, compiled especially for them, would have been glad to find something more than they knew from their inevitable study of the Act, or the statistics of the rival water companies. Somewhat of new personal experience, suggestions based upon wants found in the actual working of the powers, and others built, on the contrary, upon the clever surmounting and disentanglement of difficulties, for instance, would have been welcomed.

It would be acceptable to the new sanitary inspector to learn how he is likely to be received by the various classes of occupiers whose premises he inspects. The tenant who looks to his landlord for everything, he might be told, will hail his approach as that of a deliverer from all sorts of shortcomings in the way of water, drains, and general accommodation. The landlord who occupies his own property, he might be assured, would point with pride to the perfection with which every sanitary precaution is applied on his own estate. The greater the culture, too, generally, the warmer the appreciation of the truths of sanitary science. In the small village, where, perhaps, the blacksmith is the greatest authority, the wild burn, defiled with the drainage from the various farms on its banks, suffices for the water supply; but in the model village, where the neighbouring squire is chief owner and leading authority, this state of things is, for the most part, already superseded, and a certain sort of water-supply from a pure source is in existence. So, too, in towns. The day of universal ignorance and contempt, at last, is past; but, on the other hand, general or popular disregard is yet in full force. The effects of want of further powers in rural districts might have been dwelt upon advantageously, perhaps. Now, in the matter of bakehouses, the Act gives no power unless there are 2,000 inhabitants in the place. In some cases the result of this limitation is, that the rural authority has not power over a single bakehouse in a large union. A new privy has been built against the oven of a bakehouse at Amble, we may remark, by way of illustration of the working of this limitation, which cannot thus be condemned, as the population is under 2,000. Again, paving is not included among the means by which the public health is supposed to be improved by rural sanitary authorities. This is a grievous omission. Sanitary precautions are obviously least considered in new centres arising rapidly from the surroundings of new industries. In new places the paving is always behindhand, leaving the streets but little more than mud-tracks in bad weather; and the inhabitants would gladly avail themselves of any facility for setting themselves to rights in this respect; but this Act gives them no assistance, although the bad pavement, or utter absence of it, cannot but be allowed to be injurious to the public health. A little rising port now in our mind furnishes a case in point. Here the paving is of the nature of pitfalls, and the inhabitants would gladly have combined in its improvement with other sanitary works they have undertaken, had the Act given them power.

In the case of epidemics, the Act confers the powers to prevent people visiting infected houses and families, and no power to prevent overcrowding, unless there is more than one family occupying one tenement. As most cases of fever and small-pox, measles, and the like, occur in large families living in one room, there are no means of isolation, and there are no means provided to prevent them spreading like wildfire. When a medical officer is appointed for a union, he finds no regulation in force by which he will be informed where fever has broken out, and he has to rely upon the courtesy of the medical officers of the union for information. As these officers are not bound to furnish this information, and as private practitioners are equally exempt, it follows that it is imperfect, often late, and frequently not forthcoming at all.

Here is a piece of experience in the application of the Act to public wells. A colliery company, in sinking a pit, drains away a fine spring of water at a public well; yet there is no power to cause them to provide water from other sources, or to make them desist from their operations. It may be news to the authors of the Manual that colliery-owners have formed an association to prevent authorities forcing them to sanitary measures in pit villages. As the whole of a pit village generally belongs to a company, it follows that the cost of any works undertaken by the authority for water-supply or other sanitary measures could not be reimbursed, as, backed by the association in question, the owners would refuse to acknowledge their liability, or, in other words, would refuse to repay the expense.

Another shortcoming felt in the practical working out of the Act in rural districts is the fact that there is no power of supervision conferred over privies and pigs, except in connexion with new buildings. The owners of old houses may build these conveniences where they please, close to their dwellings, or out in the public view. Not less a nuisance is the fact that a nuisance can only be proved after a long continuance of it.

We must say a few words of praise upon the trouble that will be saved to many a busy personage by finding the kindred subjects of disinfection and adulteration of food, in one volume, with the branches of sanitary science in more familiar use. Not that there is anything particularly new here either, for, after all, the burning of infected clothing is recommended as the best means of disposing of it, but the qualities of artificial disinfectants are discussed candidly, and all told concerning them that need be known. The author of this section proposes to make our towns devoid of bad smells, that the public sewers should be periodically flushed with some of the waste chlorides of commerce, of which he specially commends chloride of lime.

* A Manual of Public Health for the Use of Local Authorities, Medical Officers of Health, and Others. By W. H. Michael, F.C.S.; W. H. Corfield, M.A., M.D.; and J. A. Wanklyn, M.R.C.S. Edited by Ernest Hart. London: Smith, Elder, & Co., 15, Waterloo-place. 1874.

But for this suggestion we might adjudge ourselves hypercritical, in making mention of the absence of useful hints for furthering progress in the first sections of the work, and conclude that a summary only of existing law, and of contrivances to meet it, was intended. As far as it goes, then, in its general handiness and ample references, we can confidently pronounce it to be worthy of the attention of those for whom it is intended.

EASTERN ART, AND ITS INFLUENCE ON EUROPEAN MANUFACTURES AND TASTE.*

IN this paper I shall express my opinions freely, with the view of aiding the cause of national progress, and I am sure that, even if my frankness gives pain in some cases, you would rather receive from me a candid statement of my feelings than words of flattery, which should induce you blindly to imagine that we are foremost in manufactures in which we are actually far behind.

In commencing our considerations of Eastern art, I must ask you to notice that in the design of an art-work, we have, first, the construction of the object, and then its ornamentation; in other words, we have first its formation and then its beautification, but the consideration of structure precedes that of beauty. Structure concerns itself with utility, and not especially with beauty. If an object which is intended to meet utilitarian ends is, when formed, beautiful, the structuralist says, so much the better; but if it is verily ugly he cares not, for he is a utilitarian only. But, on the other hand, the artist cares too little about usefulness, he making the production of beauty his first if not his only care.

The ornamentist should stand between the pure artist on the one side and the utilitarian on the other, and should join them together. He should be an artist in every sense of the word, yet he should be a utilitarian also. He should be able to perceive the utmost delicacies and refinements of artistic forms, yet he should value that which is useful for the very sake of its usefulness.

I have no sympathy with those who regard a utilitarian object as of value only as it has art-qualities—despising its usefulness; and I am equally without sympathy with those who value an object which is beautiful simply on account of its usefulness—despising its beauty. Let us have objects which are useful, but let them be beautiful also.

In this utilitarian age, and in this practical country, there is less danger of our having art works of a useless character than there is of our having useful works which are uncomely in form. The latter finds expression in the new bridge which we have just placed over the Thames at Wandsworth, the railway bridges at Cannon-street and Charing-cross, and the exterior of the Great Northern Railway Station. These are excellent illustrations of objects which are at the same time eminently useful and superlatively ugly. Yet why they could not be both useful and beautiful no one can see.

Leaving considerations of utility, and passing to those of beauty only, I must call attention to the fact that much of what we regard as Eastern ornament is more than mere ornament, inasmuch as it is the expression of a poetic thought, or of a beautiful iden. I have here a Japanese dress, the beauty of which will, I imagine, be admitted by all present. In my judgment it was the finest piece of fabric shown in the Vienna Exhibition, and this is saying much. The pattern of this rare dress consists of many-coloured flowers and butterflies, arranged irregularly upon a cloth-of-gold ground. The flowers are not shaded, but are treated as flat ornaments, and are thus befitting decorations of a flat surface. The butterflies are also flatly treated, and are intermingled with the flowers in a most harmonious manner. It is not, however, simply the colour-harmony that I wish to call your attention to, perfect as it is; nor the beauty of the drawing, excellent though it be; nor the consistent treatment of the flowers and flies, although this is worthy of special study—but to the thought realised in the work, namely—summer. No one can look upon this beautiful dress without feeling the influence of the sunny ground, of the profusion of richly-coloured bloom, of the gay and glorious insects which appear to hover over the flowers, and the influences make us feel that it is summer while we gaze. The very insects appear to be sunning themselves, the blooms appear radiant with light, and the whole aspect is that of a bed of flowers, where ten thousand blossoms vie with the most gorgeous of flies, both striving to emit the largest share of radiance, and beauty, and light, and yet all this is achieved without any violation of the most rigid art-principles. But by the employment of truthful means more can always be achieved than by resorting to falsehood. No merely imitative treatment of flowers could possibly convey the thought of summer so well as this conventional treatment does, and here we are pleased with the consistency of the means employed, while, if the rendering had been naturalistic, we should have been offended by inappropriateness.

On a cloisonné bowl from China, which was shown in the Vienna Exhibition, were three ornamental panels, situated amidst intricate and characteristic ornaments. In one of these panels was a conventionally treated spray of the apricot, in another was the sacred bean, and in a third was the chrysanthemum. These sprays not only formed a pleasant contrast with the purely ideal ornaments, but conveyed to the minds of the people for whom the work was made, a poetic thought—the apricot typified spring, the sacred bean summer, and the chrysanthemum autumn; and, besides this, the apricot is, to both the Chinese and the Japanese, the emblem of beauty. The bean is sacred,—Buddah sitting in the flower,—and the chrysanthemum is imperial. This vase was beautiful, its ornamentation was in every way consistent; the panels in which the flower-groups were wrought were not of architectural character, but were truly ornamental divisions of the surface, and it conveyed to the mind the thought of spring and of beauty, or of beauty-spring; of summer and of God,—for to them Buddah is God;—and of autumn and the imperial power; and to these people, whose ruler was the child of the sun, imperial power means much.

We now perceive that one great beauty of Oriental ornament is its poetical significance. What is art without poetry? An ornamental form is as a mere solitary word of a language: a line is as a letter of an alphabet. What use are letters unless they make words? and what use are words without they make sentences? and what use are sentences unless they convey ideas? Ornamental forms should make compositions which speak of the knowledge of the draughtsman, of his perception of refinement, of his power over colour. This they should always do, but they may do more; they may remind us of the dell where the bluebells grow, they may tell of the fading year, they may call up thoughts of joy and of spring, of evening and of shade, or of ten thousand welcome ideas, or emotions of the soul; and all this they may do without violating the simplest canons of art.

I object strongly to the poverty of the mode in which art is taught at the South Kensington Museum Schools, for they there give no instruction in the poetry of ornament; no knowledge of the speaking power of decorative forms; in fact, no insight into the higher qualities of ornament, while much of the information—information which would lead the student to think as well as to draw, information which would give him interest in his work, and remove much of the drudgery of learning—might be given while the tyro was taking his first lessons in drawing. These schools teach the student to draw, but they do not teach him to think; they raise pictorial artists, possibly, but they do not rear ornamentists. Why, I ask, is not the teaching reformed, and brought into harmony with so important a museum as that which we have in Kensington, and why is not the South Kensington Museum itself rendered more useful? The labels should set forth useful knowledge, and surely I do not seek too much when I ask for photographs of all the beautiful objects which the Museum contains. Every one cannot come to London to see the Museum, and we all want at times to refer to special examples in our houses. Why, I ask, cannot every object be photographed, and why cannot these photographs be sold at low prices? The South Kensington Museum, as matters now stand, is chargeable to an extent with monopolising art-treasures which, though paid for by the nation as a whole, can only be consulted by those resident in London. This charge is not removed by the fact that there is a small travelling museum which goes from place to place. The Museum has been founded for the good of the nation, and not for the advantage of any special district. I say, then, that as a collection of things must be located somewhere, we are bound to do all that we possibly can to render its contents useful to every person who acknowledges our nationality, and to seek to render our museums in the highest degree useful to every member of the community. I hope that the time will soon come when every town in England will have its own museum, and this the society which I have now the honour of addressing is actively seeking to bring about; but if every town had its own museum, the necessity for our copying the works of art which are stored in the central and larger museums, and of selling these cheaply to any individual who desires to possess them, would remain.

To return to my subject,—how am I to apply the principles gathered from a consideration of the poetry or sentiments of art? Where can I look for any analogous expression in English productions? If we set aside ecclesiastical ornaments, with their direct symbolism, what do we produce that conveys a beautiful thought or a welcome idea? If Elkingtons want a shield or a vase with any significance, they resort to figures, never for one moment supposing that ideas can be set forth by ornament, by flowers, by insects, by beasts, by stars, moon, and sun. We have yet, notwithstanding our vaunted progress, much, yea, very much, to learn before we shall in any way approach in spirit the excellent examples which we everywhere find in Eastern ornament.

May I now ask that you join me in inquiring into the manner in which art spread from one country to another in ancient times, and into the way in which the ornament of one country influenced that of another? I will not say that all decorative art has had its rise in Persia; but this I do say, that much, if not most, of the best surface ornament which the world has seen can be traced to a Persian source, and recent opportunities of study, of which I have been able to avail myself, have shown me that more of the ornaments of different countries certainly have had a Persian origin than I could previously have supposed.

In ancient Persian decorations and manuscripts clouds were drawn in a particular manner as ornaments, and thus drawn they were freely used in Persian decorative compositions. Now this particular and characteristic treatment of clouds is curious and of marked character. There is no mistaking it, for its individuality of treatment is obvious. I need scarcely draw your attention to the resemblance between the Persian clouds and those at present, and in times long past, drawn by the Japanese and Chinese, and especially by the former; I have seen examples of Japanese cloud-drawing which are almost identical with the Persian clouds now produced, but these examples are not accessible to me at the present time; yet in the illustrations before us we find clouds drawn in the same manner and with the same spirit, and with sufficient resemblance to each other to indicate the common origin of both methods of treatment.

It is impossible that I enter fully on the present occasion into the inquiry which I have now raised, for an opinion can only be formed after much research, and after the most careful observation of detail; yet I must give one or two illustrations of the position which I have set up. Persian art is obviously the parent of the Arabian, but it is also the source of Alhambraic and Turkish art; and these three latter styles of ornament bear the same relation to the Persian that a dialect does to a language; in other words, they are mere dialectic modifications of the Persian. The architecture of the Moors, of the Turks, and of the Arabians, is also similar to that of the Persians; and both in the forms of arch employed, in the mode of construction, and in the plan of ornamentation, there are striking resemblances between them all.

Byzantine ornament was the result of a union between the Roman and the Arabian, and in decorative features the Eastern element was dominant.

The flat ornament employed during the reign of Gothic architecture has never been equal with that employed by Oriental nations, beautiful though it was. Gothic architecture was most noble, but Gothic ornament was often feeble, and in some cases it was even wrong in character; it was wrong when it employed a structural setting-out, buttressed members, and so on. This comparative feebleness of the ornament, when contrasted with the architecture, would go to show that from the East came surface ornament, for just as its employment was removed from

* From a paper by Dr. Chr. Dresser, read at the Society of Arts on the 3rd inst.

the source from which it sprang, so it would naturally become weak in character.

There is a striking resemblance between the ornament found in the gold back-grounds of the pre-Raffaellite paintings and Persian decorations; and these back-ground ornaments, although copied and re-copied after the time of the Renaissance, owe their origin to a much earlier date; by the ignorant, however, they are sometimes regarded as Italian Renaissance productions.

A form of ornament intermediate between the Persian and this flat Gothic (or Prussian-Gothic, as it is often called) prevailed till recently on the native fabrics of Morocco. A drawing, which is a copy of a piece of handwork of this character, is before us. The Moors are a stationary, or, perhaps, a retrograde people. They have long since ceased to invent even ornaments, and are now losing their arts. I believe that these ornaments, which are semi-Persian, were procured from the Moors when they held possession in Europe, and that through them much of best flat Gothic ornament has come from the East.

I cannot refrain from noticing that we are indebted to Eastern ornament and to Eastern ideas for much that we are apt to regard as of Mediæval origin. The nimbus is not peculiar to Christian saints, for I find that the oldest "gods" of Japan have this adjunct to the head. The mother and child occur in almost every mythology, and the infant standing in the vesica-shape, or mouth of the womb, has been drawn by almost every people, and in every style of art, as an expression of the source of life. The winged head, or cherub, I have recently discovered in old Persian ornaments; and the rosary, or string of beads is, like circumcision, common to many ages and many faiths. I mention these things in order to show that much that we might at first regard as the outgrowth of a particular system, people, or age, may, by early origin, have become common to many countries, and associated with dissimilar religions.

I have said sufficient to show that art has been powerful as a means of influencing the opinions and feelings of many nations (but mark, its influence may, like that of words, be either good or bad: if false, it will aid falsity; if true, it will induce truthfulness). I have also reminded you that three styles of ornament, at least, which have become typical of nations and peoples have had their origin in one style; or, in other words, that, from a consideration of one style of ornament, three nations have borrowed ideas which they have, after mental digestion and assimilation, produced anew as a style of decoration characteristic of their own feelings and ideas. I have shown you that there is reason to believe that all peoples were at one time fire-worshippers, and were thus associated together, and that an imaginative faith which followed this primitive religion was common to Persia, China, and Japan; also that these nations all draw clouds in a curious and characteristic manner, and that they must consequently have held some sort of intercourse one with the other. I have shown you that symbols and customs which are often regarded as purely Christian and Mosaic are common to other faiths and other peoples. I have given an illustration, which all can understand, of the manner in which ornament and architecture may reveal historic facts, by referring to an Egyptian column. Thus you can see how I reach my conclusions; and I have shown you that much ornament has obviously risen from a desire to copy Persian examples. I have thus made good my position, and have illustrated it, that most of the best flat ornament that the world has seen has, directly or indirectly, come from Persia.

Society of Engineers.—The first ordinary meeting of the Society of Engineers for the present year was held on Monday evening, in the Society's Hall, Westminster-chambers, Victoria-street. At the conclusion of the ordinary routine business, the retiring president, Mr. Jabez Church, presented the premiums of books which had been awarded for papers read during the past year. The premiums having been presented, Mr. Church retired from the chair, which he had occupied for two successive years, receiving a warm vote of thanks from the meeting. He then introduced to the members the president for 1874, Mr. William Macgeorge, who then delivered his inaugural address.

A PICTURE OF THE TIME.

SIR,—It never occurred to Bob Beggot's friends that they could like him better than they did, and yet he is a trouble, inasmuch as those who have had a lot of it do not count small doses infliction, much less affliction; at all events, that is his opinion seemingly. He has stood beside too many deathbeds to be a lively companion now.

There are some fellows who cannot forget, and others who cannot remember. Why, in the world, do not they be led by law and evidence? There is plenty of both, and what is their use if they are not to be used? There is plenty of law for those who ask for it,—rather more than enough for those who do not; and as for evidence, you may find sufficient to prove almost anything if you do not happen to get beyond the amount you want. A long run of misfortune is apt to make a man a cynic or a stupid. Bob is a stupid. Christmastide brought no pleasure for him, since those who intensified the delight of all seasons alike as they came for him, had left him alone, and he lived only in retrospection. "You may laugh," said he, "but I solemnly aver that, had it not been for the little book that I removed from poor dead Annie's hand, I believe I should be mad now." Poor Bob, the mesmerism of "the shadow of death" stupifies him now, but he possesses the remedy, and his friends like him better than ever since he acknowledges his belief in it. Faith or infatuation, whatever it may be, thank the Giver of all good, most for His best gift,—BELIEF, that brings comfort in adversity, strength to the sorely tried, and peace when else there could be none.

"The Shadow of Death" enshrouds, in big and bigger type, a whole house and shop in Bond-street: athwart the whole edifice, and on door-jamb, lintel, and window-pane. Stop and read it, "The Shadow of Death."

But do not stop long to read, for you will learn nothing from the big and bigger letters of wrong direction, and there are hundreds and hundreds of visitors who will walk upstairs before you if you stop to ask yourself,—"What, in the world, does it mean?"

"The Shadow of Death," as painted by Mr. Hunt, typifies the means by which repentant sinners are promised eternal light and life; for, like most allegories, it admits of more than one construction, and yet, unlike the generality, it stands in no need of description, since, by the astonishing unanimity of most critics, very copious interpretations of the painter's intentions do more than supplement his own written statement of them in a pamphlet to be obtained at the gallery where the picture is being exhibited.

It is a notable work, no doubt, much to be admired for its thoroughly studied and elaborately painted detail; and it is to be hoped that it will ultimately repay the energy, earnestness, and care, with which an idea has been realised,—only an idea. It requires a special bent to make historical romance interesting; it usually makes but the more mazy what was a labyrinth before. How far an *addendum* to the sacred record of Jesus's life by supposititious sensational incident can be justified, is and must remain a question of opinion and taste.

Ritualism, spirit-rapping, the influence of a more than florid school of poetry, and the opening of the Suez Canal, may all tend towards giving latitude to conjectural and collateral illustration of some facts that are best left distinct in their integrity.

The most realistic representative art goes for nothing when employed in attempt to pass what is known to be fiction for truth: the stronger its assertion of truth, the greater its falsehood, of course.

Tradition, in these matter-of-fact days, has lost half its value, unless habit and belief have made it strong enough to pass for knowledge.

Formerly, one might occasionally read or hear of some to-be-extra-blessed baby receiving baptismal denomination—leagues and leagues away from the scene of Christian-rites' origin,—having its brow crossed with veritable water from the river Jordan (perhaps from amongst odd tiers of various vessels where mineral waters, and waters from every chink of the rocks of ages—might be bought, the precious drops that have their first spring in Palestine may be obtained). Not for you, smudged dot of creation; not for you, whose first laugh is owed to a bright-coloured bubble that floats on the gutter-scum, your only source of christening,—yours, and its common designation.

It is all Chelsea waterworks to a lukewarm puddle that no great gain is to be derived from "trying back" when the world's watchword is "Forward." And yet, to some, the Jordan is the same Jordan still, though thousands of new springs and tons upon tons of defilement,—pollution that the muck God's people make of God's gifts,—lie in its bed.

Oh! old habit, how long will you wear? To the last will it last, until the shadow of death,—the shadow of a shadow the most fleeting of all to those who believe in Christ,—tones all views in this world's light; and knowledge, indeed, shall come, and rest; knowledge of what was superstition, what is religion, and rest,—beyond all doubt.

Not quite in the same spirit as rich Mr. Lacquer, of Birmingham, sends for baptismal water from the Jordan that his son may be thoroughly christened; nor, as in a lesser degree, suave, fashionable Mrs. Bantling crosses the Channel in bad weather, that her daughter may be married in a Paris satin dress, when Jawell & Rouge or Allis & Lewinby, could have given her the world's best choice of such material,—without sea-sickness,—has Mr. Hunt lived on a roof, for horizontal light; been to Bethlehem for complexion, and taken a run to Nazareth for some "required fresh matter," and waited all the changes of weather, the obscuring of the sun by mists, and the rising of the wind, &c., "which early and late are, even in Syria, to a painter with a large canvas, distractingly frequent;" and we should tire if we told all Mr. Hunt's trouble besides. There is no need: he is being very well rewarded.

Formerly, admiration for such a picture as this,—appreciation only, indeed, would have been confined to those who crossed themselves when they prayed, and sometimes when they did not; who told their beads, and went any lengths for a short cut to their designs. Jesuits would make much of such a mind and handicraft as belong to Mr. Holman Hunt, if politeness left it to be believed that there were Jesuits nowadays.

Years ago, good people, who thanked God whatever their apportioned lot might be, and asked pardon and patience for what brought and what appeared to them trial and trouble, their share of this world's sorrow; when they knelt with closed lids, "turning their eyes into their very souls;" the grand cathedral, the decorous, graceful church, and the cleanly-swept little chapel, were alike to them—the house of God; the grander, the more decorous, and the more free from common dust and sully the better; but this latter consideration was for the working-days' consideration, not for Sunday's; the hand's work then was to veil sight of all that mortal hand could do or help.

There is so much to be seen now in church and church ceremony, that the eyes never close till the sermon commences; for every now and then some new addition or variation is made to, or in, religious service. However, it is to be hoped that no such change shall come as will admit of inventing a new "gospel." J.

STREET PAVEMENTS.

IT is evident, from the leading articles and correspondence in the press, from the strong expression of feeling at public gatherings, and the warm discussions that take place at the meetings of local authorities, that the inquiry as to what form of street pavement is most noiseless, healthy, and safe excites much interest at the present moment.

The first step towards improvement on the old granite setts was made by the Commissioners of Sewers in 1869, when, guided by the experience gained in Paris, they permitted a sample piece of pavement to be laid by the Val de Travers Asphalte Company in Threadneedle-street, which remains apparently very much in its original condition to this day. This sample is of the pure bituminous rock obtained from the mine about twenty miles from Neuchatel, in the Val de Travers, which the writer visited last October. The vein is about 12 ft. thick, is from 60 ft. to 80 ft. below the surface, and *is*, curiously, quite evenly impregnated with bitumen throughout its depth; while the rock immediately above and below it is not impregnated at all. The extent of the vein has not been determined, but galleries have been driven into it in various directions, and the quantity of rock obtainable appears to be practically inexhaustible.

The engineer to the Commission, in his report, dated July, 1870, furnished facts of such a nature to the Streets Committee, that the commissioners determined to pave the Poultry and Cheapside with a similar pavement. This was done, and since that time several of the important thoroughfares in the metropolis have been paved with asphalte of this company, or that of other companies called into existence by the success they achieved. Indeed, a great deal of public spirit has been exhibited, and a very large capital sunk in these matters, of which it is to be apprehended the general public, rather than the shareholders, have thus far reaped the benefit.

In the report alluded to, it is stated that safety depends, at times, "largely upon the condition of the surface in respect of cleanliness;" and, under the head of "cleansing," it states that this pavement offers great facilities for doing this effectually and economically, and that this could be done every morning, and be maintained "in such a condition of cleanliness as, hitherto, has not been obtained in the City of London." Upon this head the following is the final paragraph:—"Cleanliness of surface is, indeed, under certain conditions, the best means of preventing slipperiness, and, on that account, I specially draw attention to the question of cleansing."

About a year afterwards, namely, in July, 1871, when a great number of other important thoroughfares had been laid, a further favourable report was made upon these pavements, and, under the head of safety, cleanliness is again insisted upon; and the secretary of the General Omnibus Company, the inspector of pavements, the superintendent of street cleansing, the police, and the inhabitants of Cheapside and Poultry, are unanimously of opinion that fewer horses fell than used to fall on the granite; while Captain Shaw states that he is convinced that there is "less danger in travelling over the asphalte than over the granite; that it is safer for the horses, and easier for heavy, fast-going carriages."

At this time it may be considered that the question of durability, as to which there was at first much doubt, is satisfactorily disposed of; but it has been discovered recently that asphalte is much more slippery than was thought before, and a great clamour has been made asking the authorities absolutely to remove it, and, generally, requesting further that an American wood pavement should be substituted. The question now to be considered impartially is: Ought this to be done?

An asphalte pavement,—being jointless and impervious to wet, very easily cut into for repairs, cheaply cleansed, and moderate in first cost,—has advantages of its own possessed by no other pavement; but its slipperiness, when slightly wet and dirty, must be fully admitted, and, as it will be seen by the several reports above named, has been understood from the first. It would appear, however, that even the care at first bestowed has not been persevered in, and, as a consequence, stronger impressions on the part of the public as to the slipperiness, have become general.

The particular wood pavement which some persons recommend, is composed of small blocks set ½ in. apart, on two layers of 1 in. boards, the spaces between the blocks being filled with a mixture of tar and gravel.

We will dismiss the statements obtained from America, where this pavement seems to have failed for various reasons; will say nothing about the difficulty of renewing worn blocks, or of cutting through the foundation of boards to get at gas or water pipes, without destroying the distinguishing principle of this pavement; and we will admit that when first laid, it is pleasant to travel over; that the workmanship is excellent, and the material likely to last much longer than that used at New York. We will also forget that wood has already been tried and failed, mainly because it wore very unevenly and became slippery. But, after all this as to wood, unlike asphalte, traction is very great upon it. It is very absorbent, and not easily cleansed; its first cost is great, and, unless coated with gravel and sand, it must quickly become out of order, as the tar and gravel get loosened from the joints, and the blocks wear round. This may be seen to be the case in King William-street, in spite of the unusual care bestowed to keep that sample piece in order. And here we may remark that the report now just issued of the engineer to the Commission, specially as to the slipperiness of different pavements, cannot be unreservedly adopted, not only as the writer points out, because of the time of year, when there was no frost, which is very unfavourable to wood, but also because, as was mentioned in a letter to the *Times*, the wood has been continuously sprinkled with sand and gravel (of which he seemed to be ignorant), so that the traffic really passed over a sort of macadam, with a foundation of wood. In fact, wood pavement, in the condition which it must be in, if used in an extensive thoroughfare, has not yet been tested at all; the expense of constantly sanding and gravelling would be very great on a large scale, besides the cost of removing the mud engendered by this process.

On the whole, therefore we do not see that a case has yet been made out in favour of wood, which justifies an appeal to the authorities to repose any great confidence in it; nor do we think that those good qualities in asphalte pavements, which have induced its use thus far, are shown to be overrated; but rather that a return to whatever system was in force prior to the last twelve months would very much remedy what is complained of, and that further attention should be paid in this direction. Apparently the Commissioners of Sewers are of this opinion, as they have directed the Streets Committee to make experiments for the next three months as to the best mode of cleansing; and we are glad to see that the several asphalte companies have united in offering a premium for any improved invention for this purpose.

We can scarcely suppose that the testimony collected by the Commissioners for their guidance, in the first instance, was fallacious. By it they were thoroughly justified in all they have done; and we trust that ultimately they will be justified still further.

STATUE OF JOHN BUNYAN.

WE mentioned some time ago that Mr. J. E. Boehm, of the Avenue, Fulham-road, had executed a fine statue of John Bunyan. On Saturday last, it was cast, in bronze, by Messrs. H. Young & Co. at the Eccleston Iron Works, Pimlico, the young daughter of the sculptor opening the valve which allowed the melted metal to escape into the mould.

This monument is given to the town of Bedford by the Duke of Bedford, and the likeness is from a contemporary painting by Sadler, in the possession of the Rev. Mr. Olive. It is intended to occupy a prominent position on St. Peter's-green, where five roads meet at the approach of town.

Bunyan stands forth as the preacher, with the open Bible in hand. The shackles of his prison lie at his feet. The dress is of the period; and the statue will stand on a granite pedestal, around which will be relievos from the "Pilgrim's Progress." The work, which is colossal, will weigh about 2½ tons.

THE NATIONAL ACADEMY OF FRENCH ARTISTS.

THE love of centralisation, the passion for "officialism," if the word can be coined to designate a mania, so difficult to define, that seems inherent in the French character, have become manifest in a curious and mighty form. M. de Cheunevières, the new Directeur des Beaux Arts, has laid before the Minister of Public Instruction a vast project for the establishment of a National Academy of French Artists, based seemingly on the French Academy of Letters and Sciences. The academy is to be instituted under the honorary presidency of the Minister of Public Instruction and Fine Arts. It is primitively to be composed of all French painters, sculptors, draughtsmen, architects, engravers, and lithographers, who have received a recompense from the State; that is to say, all members of the fourth class of the Institute, all dignitaries of the Legion of Honour, all holders of the medals distributed after the annual *salons*, all students who have obtained the Grand Prix de Rome. The academy will elect annually a committee, charged with the organisation and direction of national art exhibitions; and this committee will select among the exhibitors any number of candidates for academical honours. Every member of the academy will participate in the vote. Moreover, though an artist may not exhibit, he will, if his work be deemed meritorious, be proposed as candidate by the committee of supervision. Foreign artists exhibiting in France may also be elected; but they can take no part in the deliberation of the academy. Lastly, a few honorary members may be selected. The attributions of the academy are simple. It will organise and direct exhibitions, the State providing the necessary accommodation on condition that the show is opened annually to French and foreign artists. All the artists who have taken part in former exhibitions (that of 1848 excepted) will be called upon to elect the examining jury. The members of all these juries will be *de officio* academicians. The academy will be divided into four sections: that of painters and draughtsmen; that of sculptors and engravers of medals and precious stones; that of architects; that of engravers and lithographers. Every three years a general meeting will take place, and a president, two vice-presidents, and a committee of administration will be elected. The resources of the academy will consist in the income derived from legacies and donations, and from the receipts of the annual *salons*.

INAUGURATION OF THE MONUMENT OF CONSTANT DUFEUX, PARIS.

A MONUMENT has been erected by public subscription in the cemetery of Mountparnasse in memory of the late Constant Dufeux, architect, and on the 22nd of last month it was inaugurated. The subscription was initiated and supported by his former pupils, some of them now leading architects, and to one of these, M. Ruprich Robert, the design of the monument was confided.

Four discourses were pronounced in presence of a large assemblage of persons; one by M. Godebœuf, in the name of the "Société Centrale des Architectes," and one by M. César Daly, director of the *Revue Générale de l'Architecture*. The latter was an eloquent and touching address worthy alike of the head and heart of our esteemed and accomplished friend.

NEW STREET AND PROMENADE IN DOUGLAS, ISLE OF MAN.

THE struggle in connexion with this question, the rival architects being Mr. Culshaw and Mr. C. O. Ellison, both of Liverpool, has been advanced a stage by the decision of three Liverpool surveyors, Messrs. Picton, Weightman, and Sherlock, to whom the question was referred back by the Lieutenant-Governor, on the occasion of the passing of the Douglas New Street Bill, by the representative branch of the Legislature, who by their vote had adopted the Ellison plan. The report of these gentlemen has been received by the Governor, and by him referred to the Town Commissioners of Douglas, who are the parties to undertake the work. The Governor in his letter sets forth the conditions upon which he will be prepared to advise the Legislature. The surveyors in their report say:—"We have no hesitation in reporting that, from this general point of view, Mr. Ellison's plan presents many decided advantages. The previous plans (Culshaw, Todhunter, Robertson) merely provided access from the pier to Prospect-hill. The narrow, tortuous access northward, by Duke-street and Strand-street, remained with all its obstructions untouched, and the gradients at the upper end of the new line were far from good. Both these objections are removed by the new plan. There is, however, a much wider question. The old town of Douglas, like old Whitby, old Scarborough, and in other small seaports, had all its streets and buildings turned inland for shelter. All sea-frontages were avoided. The new road, leading northward, has to some extent remedied this, but only partially. The new scheme, by its intake of the foreshore, and the formation of an esplanade and drive, provides sites for lines of houses overlooking the bay, like those at Llandudno, Aberystwith, and Southport. The drive in front communicating with the present promenade will give easy access northwards; while the other fork, leading to Prospect-hill, is shorter and less steep than the former one."

The Sheffield Borough Surveyorship.—At a joint meeting of the Highway and Improvement Committees, it has been decided to recommend the council to elect the future borough surveyor from the following three gentlemen, selected from the reduced list of six, which we have already given:—Mr. P. B. Coghlan, civil engineer, Margate; Mr. Bryson, assistant borough engineer, Newcastle; and Mr. R. Vawswer, borough surveyor, Warrington.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AN ordinary general meeting of the members was held on Monday evening, Jan. 26th, Sir Gilbert G. Scott, R.A. (president), in the chair, when the following gentlemen were elected:—Messrs. T. Drew, E. Hoole, T. Lawrie, and J. E. Rogers (fellows); Messrs. A. Bridgman and G. Sparrow (associates).

Mr. F. P. Cockerell (hon. sec.) announced the death of one of the Institute's most distinguished foreign members,—M. Baltard, architect, of the city of Paris, as already mentioned in our columns.

Mr. C. L. Eastlake (secretary) then read a letter from Major-general Scott, on behalf of the Commissioners of the Exhibition for 1874, asking the Institute to nominate three Fellows to serve on the Committee of Architectural and Building Contrivances and Materials; and announced that the President, Mr. Horace Jones, and Mr. T. H. Wyatt had been nominated.

Mr. R. B. Grantham, C.E., then read a paper "On the Water Supply of Country Mansions," part of which we print elsewhere.

Mr. Charles Barry, in opening the discussion, said that he was sure that they all felt indebted to Mr. Grantham for bringing the subject of the water supply of country mansions before the meeting; it was a subject which had attracted their attention from time to time. It seemed to him that the question of the number of gallons Mr. Grantham assumed to be required for personal use in households (10 gallons), and the number required (10 gallons) for the use of horses, carriages, cattle, &c., was not sufficiently gone into. He would like to ask Mr. Grantham on what basis this prescribed number of gallons for the purposes mentioned was founded. With regard to the cost of the particular system adopted, which they were told extended over 3½ miles of ground, at the entire cost of 2,000*l.*, he would ask whether the cost of the reservoir was included in this charge. The estimate was much lower than he supposed that it would be to execute the works described. He would ask, too, whether, any provision was made to prevent pipes being affected by the frost, for mostly when they were wanted they were found to be frozen?

Mr. Jennings would like to know why different sized pipes were used, the pipe from the engine at a certain distance being a 3-in. pipe, and at a further distance a 6-in. pipe. What the object of this was he could not say. The delivery-pipe being larger, he could not understand the reason it was divided in some places.

Mr. T. Morris said that there was one point he would remark upon as to the motive power in supplying mansions with water, and that was regarding the power of wind. He would ask as to the advisability of constructing a small windmill upon large estates, with picturesque effect, to carry up the water.

Mr. C. Fowler asked whether cast-iron pipes alone were used to carry the water, or whether any others were adopted?

Mr. Grantham, in answer to numerous questions, said, that as regarded the number of gallons to be personally supplied, in towns the supply was generally twenty-five gallons to every person, which was quite sufficient, taking all ages, for all purposes. In the country, twenty gallons,—ten gallons for domestic purposes and ten gallons for horses, and so forth, were quite sufficient. In answer to the question concerning the use of cast-iron pipes, these and these only were employed in the works he executed in consequence of the great pressure they had to bear upon them; the soil upon which the whole of the pipes were laid was of a sandy character, and in some places there was clay. With regard to pipes being protected against frost, that was sufficiently guarded against by having placed them from 2 ft. to 3 ft. underground, which, in this country, was quite sufficient to protect them from freezing, 18 in. even being safe. The water was entirely free from pollutions of any character, and as pure as possible, which he employed, very great care being taken that no pollution from farm buildings should get contaminated with it by its being placed under cover. With respect to the windmill for pumping purposes, he was afraid that it would not answer, for it could not be relied upon for all purposes, and he would not recommeud its use.

Mr. E. C. Robins, at the wish of the Council, then read a communication respecting his use of the steam jet in cleaning the stonework of Hanover Church, Regent-street. In the course of his remarks he said, that in the year 1867, he was walking near the Champs Élysée, in Paris, when his attention was arrested by what was to him a novel process for cleaning down the façade of one of the public edifices. Upon a suspended scaffold, commonly used in France, a workman, whose head and hands were sheathed in a protective covering, was holding the nozzle of a pipe, connected by tubing with a steam generator situated on the ground below. After watching the process, and observing the facility with which the sculpture and carving were effectually cleaned by the steam jet directed by the workman, and aided by the simple operation of brushing, he made a note of the circumstance for future use. Last year he was requested by the vicar and churchwardens of Hanover Church to undertake the renovation of the building. Acting upon his report of the necessity of restoring the external stonework, in the first instance, he was requested to do something to improve the gloomy appearance of the façade, which had become encrusted with a thick mass of black smoke. A strong party in the parish were most anxious that he should remove the portico altogether. He need not say that his respect for their first president (the late Professor Cockerell's) design caused him strenuously to oppose such an act of Vandalism, in which he was ably supported by their Hon. Secretary for Foreign Correspondence, who kindly consented to act on the Restoration Committee, but he pledged himself to clean down the front in such a way that the beauty of the details should become visible by the removal of the smoke and the resuscitation of the natural colour of the stone. To accomplish this end without injury to the building by any tooling of the surface, he called to mind the process he had seen in operation in Paris, and straightway went thither, taking with him his mason, Mr. Whitehead. For several days he could find no clue to the process, which had not been seen in Paris since the war. At length he was directed to the patentee, M. Nivert, from whom he obtained a prospectus, with a list of the buildings operated upon at the time of its publication. He learnt also, that though patented in France and England, financial difficulties had stopped its continued use. Arriving in London, he obtained the specification at the Patent Office, and was informed that the letters patent granted in 1866 had expired in 1869, and had not since been renewed. It was open to him, therefore, to employ the process on his own responsibility, which he at once did, obtaining from Mr. Sykes, of Bankside, the necessary apparatus, in the shape of a steam-generating boiler, fitted with tubes and nozzles for the supply steam, and an injector for raising a column of water, with which M. Nivert mixed chemicals. A constant supply of water from the main kept the feed-cistern at one level. The result of this experiment has been most successful, in the opinion of the competent architects who have inspected the process in action; while the appearance of the building, which is faced with Bath stone, will speak for itself. There has been no tooling or dragging of the surface of the stonework, except where new stone has been inserted in the place of stones absolutely decayed. This new stonework has received three coats of Ransome's preserving solution. The old stone facing, after being played upon by the steam-jet, and rubbed down with hair and wire brushes, and left quite clean, was so little affected by the process that it was found impracticable to use Ransome's solution upon it, since it remained on the surface, and had the appearance of whitewash, the weathered face being insufficiently porous to receive the solution,—an incontestable evidence that with a pressure of 56 lb. of wet steam, the surface of the stone has not been damaged. At first strong lyes were used in the form of awash previously to using the jet, but it was soon discontinued, the steam jet being found equally efficacious without any chemical aids. Care must be taken to prevent accidents from the pressure of the steam in piping, junctions, and nozzles. But in this and other practical details, the experience gained by Mr. Whitehead will be found eminently useful to any architect desiring to repeat the process. He had only to add that he had thought the result of this experiment sufficiently important to call the attention of the committee, and of the profession generally, not only to the means it offers for cleansing metropolitan buildings, but for the conservation of ancient monuments. Paint and whitewash may alike be removed by judicious operation. And the interiors of our old country churches, so often irrevocably injured by too zealous restorers, might by this means be rid of the preserving whitewash without injury to the details of either stone, wood, or metal work,—superseding any necessity for tooling or dragging the surface of the stone, which has ruined so many examples throughout the country, rendering them comparatively valueless for the purposes of study. The total cost of the experiment had been 285*l.*,—6d. or 7d. per foot super., just the price of cleaning down.*

Mr. E. Hall thought that Mr. Robins was deserving of the thanks of the profession of architecture for bringing this matter forward; they had to congratulate themselves upon the fact that the experiment had been an entire success.

The President said that Mr. Robins's paper was of extreme importance. There was no doubt that dirt was a great element of decay, and in a process like Mr. Robins had tried, where dirt could be removed without injury to the stone, it was of the greatest possible benefit to the profession; and he trusted that the success of the process would soon be generally known.

ON WATER SUPPLY FOR COUNTRY MANSIONS.†

THERE are many very large establishments, such as hospitals, barracks, prisons, union workhouses, educational institutions, &c., situated in isolated positions and in which large numbers of persons are lodged and maintained, where a good and abundant supply of water is of the greatest importance and necessity, both for consumption and as a protection against fire. In addition to these objects of first importance, I may enumerate others, such as the many purposes of ornament or pleasure, served by an ample water-supply, as well as its absolute necessity for the successful prosecution of horticultural pursuits, and its great value in cases where large numbers of cattle and horses are kept in situations where great labour would be necessary in pumping the supply or conveying it from a distance.

The qualities of water vary very considerably. The softness of water is a quality much sought after. This property is found to vary according to the source from which it is obtained, some districts supplying soft water (which is the purest form), others affording hard water. Those waters which come from the chalk or limestone formation are invariably hard, varying generally from 16 to 20 degrees of hardness (Clarke's scale), that is so many grains of carbonate of lime in a gallon. These, upon boiling, will leave in a short time a thick deposit, or fur, upon the inside of boilers, kettles, &c.; but by this process the water becomes softer in proportion to the lime precipitated. Waters from the green sand and new red sandstone formations are probably the purest and softest of any of the kinds which are drawn from the earth; but the softest and those containing the least degree of hardness are those which are gathered from elevated and mountain countries, having 4 to 5 degrees of hardness only, but they usually contain inorganic substances, and are frequently tinted with the colour of the herbage or soil on the surface of the land from which it has been gathered. Except in appearance, however, this water is the best for clothes-washing, boiling, tea-making, brewing, &c.; while the hard and well-aërated waters are more sparkling, fresh, and agreeable to drink.

This leads me to the subject of filtration. The materials generally used for filtering purposes are sand and gravel and animal charcoal. It has been found, however, by experiment that the pores of the charcoal, although it absorbs organic matters for some time, will sooner or later become clogged, and will cease to arrest those matters; and not only does the charcoal cease to act, but it will return the matters which it at first absorbed. However, for small filters, where the material can be replaced or reburnt, it will answer the purpose. For filtering reservoirs, sand and gravel of various sizes have been found the best medium. The sand must not be too fine, lest it should become choked, and it must be freed from admixture with all ferruginous and other matters.

In the supplies that we are here considering it will rarely be necessary to provide filters in the reservoirs. It is worth while to mention a

* We gave particulars of experiments in London with the steam-jet some time ago.

† From paper by Mr. R. B. Grantham, C.E., already alluded to.

curious fact in connexion with open reservoirs. It has been observed that in shallow reservoirs there has been a growth of confervæ, and on the decay of this, animalcules have sprung into existence; but this has never occurred in reservoirs containing a depth of 15 ft. to 20 ft. of water, or where they have been covered and kept in the dark: it is therefore necessary to bear this in mind when constructing service-reservoirs.

In order to confine the operation within the smallest possible limits, the filter may be so contrived on the premises as to deal only with the water to be used for drinking, washing, brewing, &c.; while for stables, cattle, gardens, house-washing, closets, flushing sewers, and fire-service, the water may be left unfiltered. It will be necessary to have the tank or reservoir occasionally cleaned out, and it should therefore be constructed in two parts, so that one part can be cleansed while the other is full, and a continuous supply be thus insured. Reservoirs or tanks should be left uncovered when they are in the open country and away from smoke, dust, leaves of trees, and other polluting sources; but if near buildings they should be covered, to keep these matters out, as water is very quickly impregnated by such, especially when shallow. As before stated, the greater the depth the less liability is there to this danger.

There are probably few towns supplied with such good water as London; all that is taken from the Thames and the Lea being filtered, and we know that in both cases the sources are chalk and the strata both above and below that formation.

As a rule, all the softest kinds of water are most injurious to and destroy iron more quickly than the harder water, but this is in a great measure prevented by Dr. Angus Smith's composition for application as a lining to iron pipes, tanks, &c.

Dr. Voelcker states that water which has been acted upon by lead is not so injurious as we have been led to suppose. The waters which act upon and dissolve lead are those which contain organic impurities, alkaline constituents, such as carbonate of soda and potash, and those in which carbonic acid is present. Fortunately, however, the lead may easily be got rid of. A small piece of zinc in the water will destroy the injurious effects, because zinc is more readily attacked than lead; also it will be precipitated by the carbonic acid which will be absorbed by the water on exposure to the air. An ordinary filter will arrest the particles of lead.

From the Report of the Water Supply Commission, it appears that moderately hard water, the hardness of which is due to the presence of carbonate of lime, when used for drinking purposes is not injurious to health. Persons, however, who are accustomed to soft water, might be disagreeably affected by changing it for hard water, and *vice versâ*, but those who are in the habit of using hard water of that quality are not injuriously affected by it. But although there is no evidence to show that water which is hard, owing to the existence of sulphate of lime, is absolutely injurious, water of that quality of hardness is objectionable.

The evidence proves that for washing, soft water is far preferable to hard, and is also more economical.

Quantity of Water.—The next branch of the subject which we have to consider, is the quantity of water which it may be necessary to provide for a mansion and all its belongings. The basis of this calculation is, that of the number of persons who compose an establishment, and are dependent upon and require an ample supply, and in addition a considerable allowance should be made for storing it, to meet contingencies such as fire, the lessening or total failure of springs or streams in long droughts, and other causes at those particular periods, as in summer, when larger demands are made upon the supply than in other times of the year. In an establishment such as that of a nobleman or gentleman in the country, the personal requirements may not be more than ten gallons per head of residents per day, but for all other purposes, such as house-washing, also for horses, carriages, cattle, watering pleasure and vegetable gardens and roadways, fountains, cooking, brewing clothes-washing, and several other purposes, ten additional gallons should be provided, making twenty gallons per head as the probable consumption of the establishment, and in addition to this amount there should be provided in case of fire, a storage equal to three months' consumption in the event of the supply failing in dry weather. It would not be safe, in the event of fire, to depend upon the pumping or other means of raising water, or gaining it by gravitation to check fire, as much time is lost in getting the pumps to work, and the quantity may not be sufficient, and the force inadequate to send it to the required height.

In some situations where farms and villages on an estate are situated at great elevations, and where water is difficult to procure, or probably not of good quality—and again, in the case of fire,—it may be necessary that the storage for the mansion should allow by a slight increase of its capacity to be extended to those localities, and it would be but reasonable that a small rent should be demanded. Another want sometimes arises, and that is the supply of ponds for cattle in the fields in summer.

For this a very small pipe would be needed. It may be found agreeable to form a skating-pond, which requires a very small quantity of water to keep it supplied.

Modes of Supply.—The modes of supplying water are by pumping either by steam or water wheels, turbines, horse-power, or by hydraulic rams, from wells or from reservoirs, rivers, or streams, at a lower level than the building to be supplied, and thus raising it so as to command the highest roof of a mansion and its surrounding buildings. In certain situations it is possible to gather and collect water in a tank or reservoir at such an elevation that it may by its own gravity be conducted to the premises by iron pipes at constant pressure, so that all parts of the buildings, gardens, &c., may be supplied without the expense of pumping or lifting. The latter mode of supplying water is far preferable to all others. The next best is that of pumping either by steam, horse, or water power, up to a reservoir constructed on elevated land so as to command the mansion where the mansion and buildings are situated on high land, and no higher can be procured within a reasonable distance, a tower should be erected which may be made more or less ornamental, according to the character of the architecture of the mansion. Upon this a tank should be placed; but a tank of this description is always objectionable, and must be limited in size, owing to the great expense of construction and the difficulty of combining a pleasing appearance with a large capacity. Where there is high ground a reservoir may be adopted, which may be constructed of brickwork or concrete and puddled. The increased cost to attain size is not the same in proportion as in the case of a tower. Even the length of piping from the source of supply to the reservoir, and thence to the buildings, should not weigh against the adoption of the reservoirs built on high ground; at all events, it is beyond all question that as large a storage as it is possible to obtain high above the buildings, as in towns, is absolutely indispensable *both for domestic purposes* and protection from fire.

Details of Fire Service.—I now wish to call your attention to a short description of a case of water supply which has been successfully carried out, and which affords an illustration of what is necessary in a fire service. The case referred to is one which I have lately completed at Somerley, the seat of the Earl of Normanton, in Hampshire. It was at first proposed to erect a water-wheel on the River Avon and pump the water from that river to cisterns on the top of the house. This was afterwards abandoned in favour of pumping by steam from a stream on the north side of the house, the engine being further employed in sawing the timber of the estate, for repairs, &c. By attaching a homestead, the engine could be made to work the chaff-cutting, thrashing, and other machines when not engaged in pumping. This plan was adopted, but the homestead was not built. Some springs of excellent water—soft, clear, and free from pollution—were found issuing from the sand and gravel, with occasional beds of clay, which compose the hills running north and south through the estate, and bordering the valley of the Avon. These contain a large body of water, forming, as it were, a natural reservoir. Their waters were collected in a service-tank at a high level, from whence the water descended to a pumping well near the engine. This well was constructed near the stream before alluded to, in which a dam was placed to keep up the water, so that, if necessary, the stream of water could be let into the well. This water is of good quality, but rising on a moor in peat soil is discoloured, and contains inorganic matter. The engine is of 12-horse power, and drives a large circular saw for cutting up native timber, which at times absorbs all its power. The water is raised up a rising main of 3 in. diameter for 1,452 yards, to where it meets the 6-in. main, by which it is continued to a reservoir on Somerley-heath, a distance of 2,178 yards, altogether 2,630 yards, equal to 1½ mile at an elevation above the engine of 110 ft. The reservoir, built of concrete, on the highest ground that could be found within a reasonable distance of the mansion, is open, in a clear atmosphere, so that the water is well aërated and kept fresh. It is 10 ft. deep, 60 ft. square at the water line, and contains 150,000 gallons. The engine generally pumps for 2½ to 4 hours a day (according to the consumption at the mansion) at the rate of 50 gallons per minute, which is much more than is required. The height of the water in the reservoir is indicated in the engine-house by means of Bourden's Pressure Gauge, so that the engineman can at all times see whether the water is falling, and when it is necessary that he should pump. From the reservoir to the mansion the distance is nearly one mile and a half, and the water is conveyed to it by a 6-in. main. The house has recently been raised one story higher and enlarged, with a conservatory, extensive terraces, with fountains, carriage-drives, and additional garden space, and all laid out with very great taste and elegance. The bottom of the reservoir is about 15 ft. above the tops of the roofs, or the surface of the water is 25 ft. above the roofs. The whole of the pipes are of cast iron, well jointed and lined with Dr. Angus Smith's composition, which prevents the corrosion of the iron by this kind of water. On its way to the mansion from the reservoir it supplies the flower and kitchen gardens, the stabling and laundries. There are stop-cocks to shut the water off if necessary for repairs or additions to the pipes, taps, &c. I am indebted to Mr. J. McIvar Anderson for the block plan of the mansion, terraces, and stables which is exhibited on the wall, and upon which I have laid down the lines of the pipes and position of the hydrants round the house and to the stabling, and also the positions of the rising mains to the floors above. The sizes of the various pipes are also given. Outside the mansion the positions of the hydrants are all indicated upon the walls near or opposite to them. Stand-cocks can be fastened in the hydrants, and to them the lengths of hose are screwed on. The pressure in the pipes is sufficient to throw jets of water from these hydrants over and upon the roof of the mansion and gallery. Within the house the pipes are laid along passages, corridors, and under the drawing-room and saloon to the interior, under the picture-gallery, at both ends of which are hydrants immediately under trap-doors in the floor with hose, wrenches, and spanners ready at the shortest notice to turn the water on, and it can by these means be directed to every part of the gallery. The water is also raised by upright pipes to every floor of the house, and stand-cocks and hose are placed in recesses in the walls readily accessible and at such intervals that two lengths of hose from different stand-cocks can always reach and discharge into every room in the house. There are also large cisterns in the roof for supplying the closets and the warm-water apparatus, &c., all over the house. The working pressure on the mains at the house in this case is about 39 lb. per square inch, which causes a sufficient discharge through the nozzle of the hose if worked only from the engine, but if worked from the reservoir several jets could be worked at the same time. The cost of the whole service of pipes and the reservoir, but exclusive of the engine, which exerts power for pumping about 4-horse power, was about 2,000*l.*, and the annual cost does not exceed 40*l.* The whole work was executed by Messrs. Easton & Anderson, of Erith. The amount of property which is protected is very considerable, comprising the building and furniture, and the gallery which contains a very valuable collection of paintings, statuary, &c.

I may conclude by remarking, that unless proper attention is paid to the sources of supply being protected from pollution, the reservoirs, pipes, taps, pumps, &c., kept in working order, all the care expended in designing and carrying out the works may be abortive, and they may become a source of loss and disappointment, and even of positive annoyance and injury. Careful supervision and frequent exercise of all parts of a fire service are essential, and it should be practised say once a month, and a mechanic, such as a carpenter or smith, should be trained to work the system, making himself acquainted with all

its details, and with the premises, so that he might be able to superintend the service, make slight repairs, &c. Such a person could probably also attend to the drainage and such like matters of the whole of the premises. Most serious consequences have resulted from the want of a practised organisation, even with every appliance at hand, and experience proves what confusion and alarm prevail on the sudden outbreak of fire, when all concerned are generally tumbling one over another, forgetful of everything but self-preservation. This is quite natural, and can only be counteracted by the confidence which will result from the existence of an effective and well-ordered fire service, under the control of a person capable of directing its use to the best advantage.

MESSRS. M. B. FOSTER & SONS' NEW WAREHOUSES IN LISSON GROVE AND HAREWOOD PLACE.

THESE extensive buildings, just completed for Messrs. M. B. Foster & Sons, are in connexion with, and additional to their original stores at the rear of their offices, Nos. 242 and 244, Marylebone-road, and extending therefrom to Harewood-place.

The new buildings are divided into three blocks, separated by party-walls and iron doors, as required by the provisions of the Building Act. The two large blocks, which are three-story structures with basements, have together a frontage in Harewood-place of 130 ft., and one has likewise a frontage of 91 ft. in Lissongrove, both abutting to the south on the playground of the Philological School.

The floor of the ground-story of these two blocks is constructed fireproof, with brick arches on iron girders, supported by iron columns; the latter are 8 in. in diameter, 1¼ in. thick, and cast in one length, with bases dowelled to granite plinths, and spreading caps carrying cast-iron boxes, forming shoes to receive the wooden posts supporting the floors above. The skewbacks to the arches are formed of plain tiles and Portland cement, cast in a mould; these are in 1-ft. lengths, and are set on the bottom flanges of the girders and grouted solid with cement. The girders consist of 10-in. × 4½-in. rolled joists, with a wrought-iron plate 8 in. by ⅝ in. riveted to the bottom flange for support of skewback, and a similar wrought-iron plate 6 in. by ⅝ in., 10 ft. long, riveted on the top flange to increase the strength. These girders were first placed in position on the columns, and then fastened together with strong fish-plates, leaving a space of 2 in. between the ends for expansion; by this means every line of girders forms a continuous tie from wall to wall, materially strengthening the construction. The boxes before described straddle over the girders, and fit into a rebate in the cap, being run thereto with lead; oak wedges fill up the spaces between the sides of the box and the web of the girders. The girders were tested before fixing, and were found capable of supporting without appreciable deflection a distributed weight of 26 tons. The arches, having an average span of 10 ft., and a rise of 9 in., are constructed of two half-brick rings of Cowley stocks set in Portland cement and washed sand, half and half, the first ring being well grouted with liquid cement before the other was turned over it. The haunches are filled in to a level of 4 in. above the crown of the arches with ground stone lime concrete; upon this are laid half battens, 5 ft. apart, as sleepers, the intermediate spaces being filled with dry sand. 2½-in. battens, laid half an inch apart, secured to the sleeper battens, constitute the floor, the ½-in. spaces being also filled in with sand. This plan was adopted to lessen the vibration and concussion that would necessarily ensue from the rolling and pitching of heavy casks. The whole of the ironwork, prior to fixing, received two coats of anti-corrosive paint. The ground and basement stories are connected by a staircase of Craigleith stone enclosed within 18 in. walls, and with double iron doors of communication. The lifts also are enclosed in a similar manner, and with iron doors, thus rendering the basement a separate and fireproof structure. These two floors together provide for the stowage of 1,500 butts of beer.

In excavating for the foundations, the subsoil was found to be a bed of loamy sand, with an average depth of 10 ft. In order to distribute the weight equally over the surface, the concrete foundations of columns (7 ft. wide and 3 ft. thick) were made continuous between the main walls, hydraulic lime being used for this concrete.

The two upper floors are of wooden construction, of a very substantial character. The girders are 12 in. by 14 in.; binders, 10 in. by 7 in.; joists, 7 in. by 2½ in.; and 1½-in. iron-tongued flooring. The binders are not placed directly in a line, but alternately to the right and left of one another; the continuity, however, is preserved by wrought-iron strap-ties. The posts supporting these floors are 12 in. square, carried alternately through two stories, the bearings of the girders being formed by corbel-blocks, housed to the posts and bolted to them (see sketch), the blocks having a key on top to secure the girders. By this arrangement the weight of each floor is conveyed separately to the upright supports, and continuity obtained vertically as well as horizontally. In thus adopting wood instead of iron, the architect was actuated by a conviction which has for some time been forcing itself upon the minds of the profession, that timber used in large scantling is safer, when exposed to fire, than iron; for the reason that, though it will soon char, it will resist for a long time the attacks of the flames, and if it should eventually succumb to them, it entails far less damage to the walls of the building. This opinion, it will be remembered, has been strongly supported by Captain Shaw, of the Metropolitan Fire Brigade. These two wooden floors, each 10 ft. high, are devoted to the storage of empty bottles, which are stacked in an upright position, six in height; great strength being therefore required to sustain the dead weight thus imposed. Space is provided for the stowage of three million bottles. The roofs, which are of ordinary king-post construction, are carried upon posts 10 in. square, with corbel-blocks on top, strongly strapped to the beams. The skylights are fitted with balanced levers, connected by rods to a quadrant, and are thus opened and closed simultaneously. The roofs are covered with slate, and wide parallel gutters have been formed to facilitate the removal of snow.

The ventilation of the two lower floors, used for the storage of beer, was a matter of paramount importance. In order to gain simplicity of working and efficiency of action, the simple valve system has been adopted, and found to answer even beyond the architect's expectations. The fresh air is admitted into the space formed by hollow walls, on two sides of the building, through large perforated panels, and thence distributed, at a lower level, by smaller grated apertures, 6 ft. apart, which are closed by valves attached to a rod that passes along each wall, and is turned by a handle affixed to it at right angles, by moving which through a greater or less angle the quantity of air admitted can be adjusted with great nicety. The sets of valves—one on each of the principal fronts—are distinct, so that one set only may be used when it is desirable to admit the air from the coolest side. The vitiated air is drawn off by stout zinc tubes, running along the soffits of the vaulting, with perforated apertures in each bay, immediately over each gas-jet, to carry off the products of combustion as soon as they are generated, and at the same time to quicken the up-current. These tubes are carried up in the thickness of the main walls, opposite the inlets, to the top of the building, and are fitted with valves 5 ft. below the external grated apertures, so as to ensure the collection of columns of heated air. These valves are worked simultaneously from the floors to be ventilated by a simple contrivance of rods and cranks. It has been found that by these means a nearly equable temperature can be ensured throughout the year, ranging from 58 to 62 degrees Fahrenheit.

The principal fronts of the new buildings in Lisson-grove and Harewood-place, which are faced with Gault bricks, and have dressings of terra-cotta,—this material being considered more durable than stone in a London atmosphere,—are treated in plain Renaissance style, care having been taken to preserve the purely commercial character of the building. The ground floor, unbroken by windows, is capped by a frieze and moulded cornice, the former pierced at regular intervals by reticulated panels for ventilation. This floor forms a podium to the two upper stories, which are divided into bays by terra-cotta pilasters, with moulded bases, and surmounted by an entablature and parapet of the same material, the cornice being fully moulded. The windows to first and second floors, which have lintels and sills of Doulting stone, are 7 ft. wide, and are divided into compartments by moulded mullions and transoms, which compartments are filled in with sashes, alternately fixed and hinged, divided by stout bars into small squares, and glazed with fluted glass. Between the two rows of windows extends a moulded cornice, and under this is a broad frieze filled in with glazed Majolica tiles, displaying in raised and effective characters the trade and addresses of the firm. The whole of the bricks used, except the facings, are the best Cowley stocks.

The third and smaller block is a two-story building of similar construction, and contains, on the first floor, a foreman's office, label and cork rooms, and a large and well-ventilated dining-room, with coat-room attached, for the men engaged upon the premises.

The superficial floor area of the new stores amounts to 54,600 ft., and, together with that of the original stores, makes a total of about two acres. The cost of the new premises was 12,000*l.*, or about 4d. a foot cube.

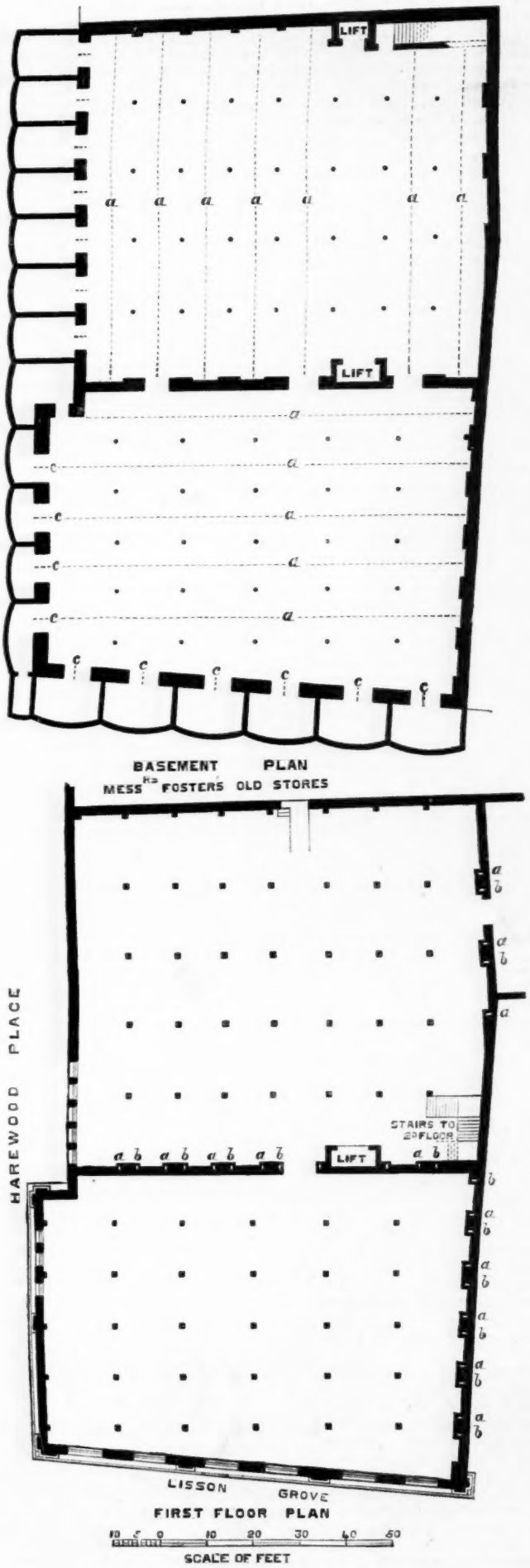
These extensive works have been executed by Messrs. Longmire & Burge, of Osnaburg-street, from the designs and under the superintendence of Mr. Thomas Harris, of Gray's-inn Chambers, High Holborn. The terra cotta was supplied by Messrs. Doulton & Co., Lambeth; the iron work by Messrs. Lindsay & Eastwood, of Pancras-street; and the gearing and fitting of ventilators and skylights, by Messrs. Richardson, Slade, & Co., of Brownlow-street.

THE CONVERSION OF CIRCULAR MOTION INTO RECTILINEAR.

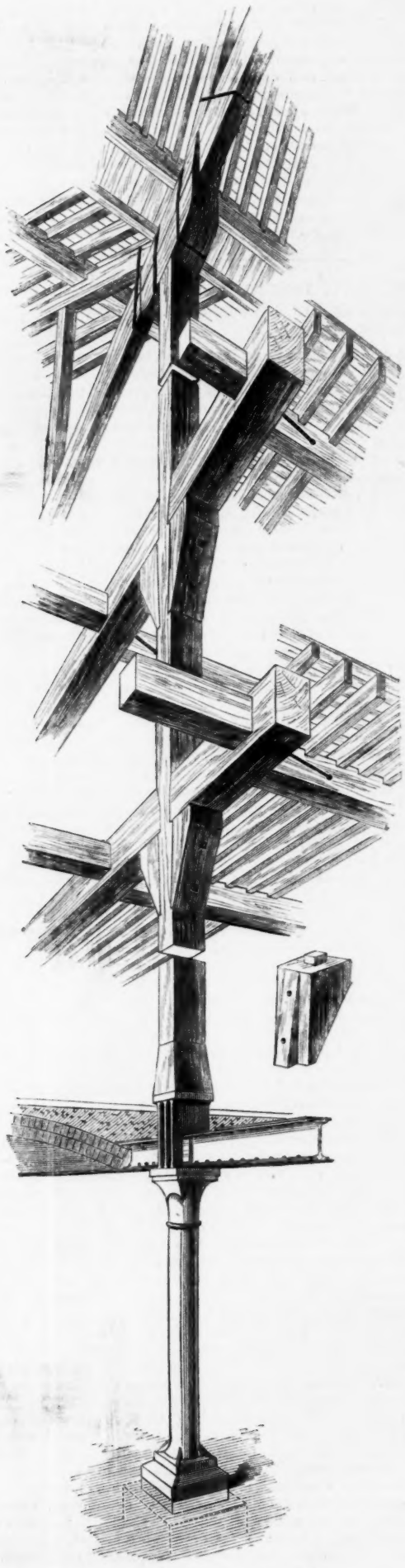
AT the Royal Institution of Great Britain, the lecturer on Friday evening of last week was Professor Sylvester, who had selected for his subject "Some recent discoveries in the mechanical conversion of motion." His special aim was to make known the discovery of M. Peaucellier, a lieutenant in the French artillery. The attention of mathematicians has long been given to the study of the possibility of converting circular motion into perfect rectilinear motion without the aid of guides, and *vice versâ*. Approximations have been obtained, but it was regarded as an impossibility to effect it with exactness. M. Tchebatcheff had for years laboured to demonstrate the impossibility of achieving it. The theory of M. Peaucellier was practically demonstrated by Professor Sylvester, who explained the working of several models which had been prepared under the direction of Professor Henrici, of University College. By means of the Peaucellier compasses or "cells," as Professor Sylvester prefers to call them, segments of circles whose centre is at any distance, as well as conic sections and an infinite variety of curves, can be drawn. The discovery is one not only of theoretic interest to the mathematician, but has important practical bearings. While in the hands of Professor Sylvester it opens up "an entirely new field of mathematical investigations, which associates itself with the most recent labours of modern analysts in connexion with the geometrical theory which forms the present basis of the integral calculus in its highest form," it places a new instrument in the hands of the practical mechanic. It is stated on authority that had the discovery been made known earlier, months of labour and much expense might have been avoided in the working out of curves in the Woolwich workshops. Not only so but, by a combination of cells, Professor Sylvester has made a "cube-root" extractor and an "angle trisector," so that the solution of important ancient problems by this contrivance marks it out as the greatest addition to mathematical and mechanical science that has perhaps been made for centuries.

A NEW METHOD OF STEAM TRANSIT ON CANALS AND SHALLOW RIVERS.

THIS proposal consists in laying a continuous wire-rope or chain, protected from rust, in the beds of canals and rivers. An *up* and a *down* line. The chain is held by a certain drum arrangement, worked by steam, in either the passenger or traction boat; is taken up and laid down as the boat progresses. The object is in a great measure to obviate the objectionable *wash* of banks caused by screws and paddles. The inventor has designs for overcoming the difficulties of bends in rivers, and for the arrangement of termini; and thinks the plan is peculiarly well adapted for the Suez canal. He deems it also capable of being adjusted with advantage to tramways.

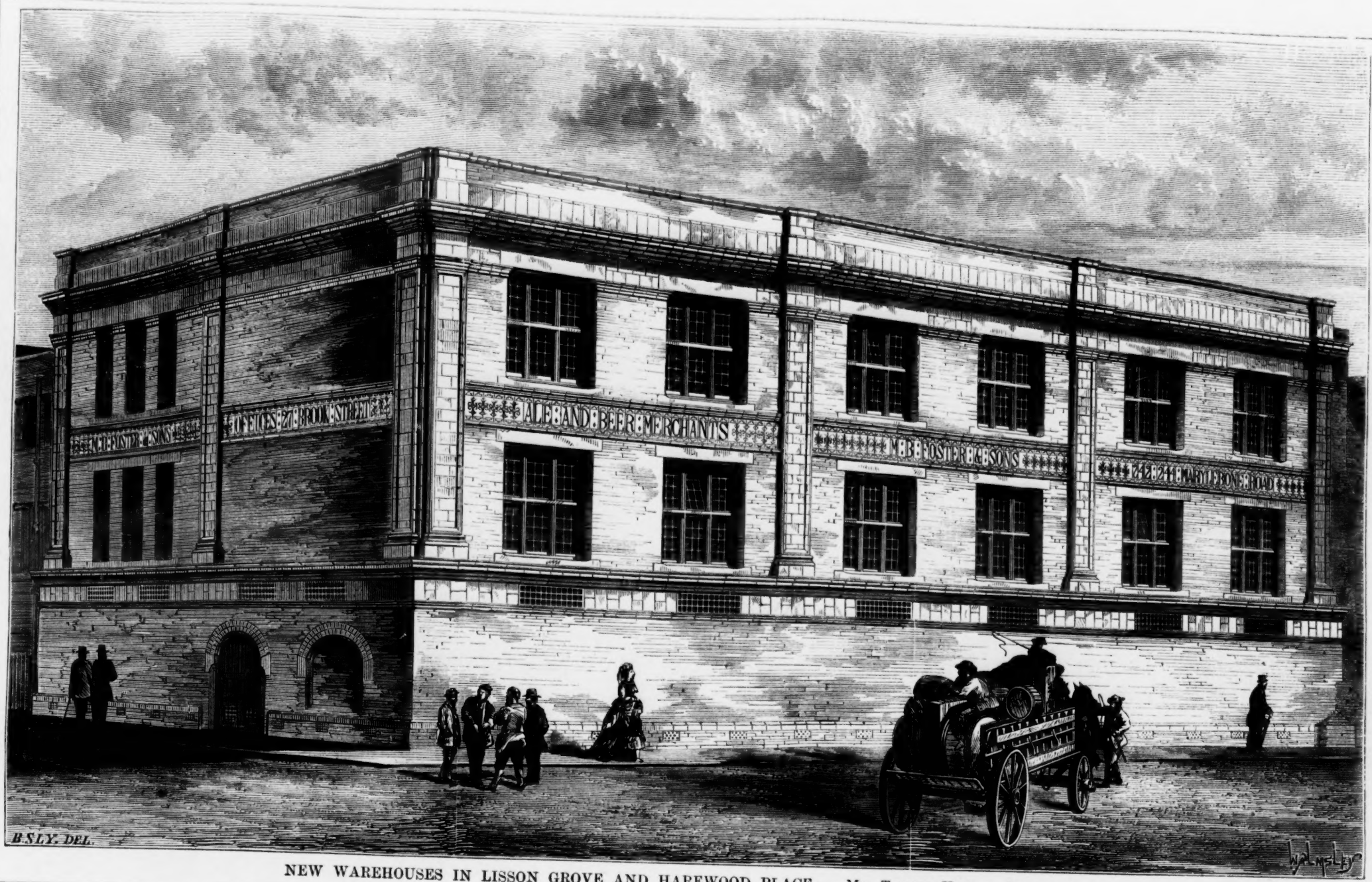


a. Horizontal flue to upcast shaft of basement.
b. Upcast shaft of ground floor. c. Cold air inlet.



Sketch showing Construction of Floors.

MESSRS. FOSTER & SONS' WAREHOUSES, LISSON GROVE AND HAREWOOD PLACE.



NEW WAREHOUSES IN LISSON GROVE AND HAREWOOD PLACE.—Mr. Thomas Harris, Architect.

RESTORATION OF MANCHESTER CATHEDRAL.

WE have to record further progress in the restoration of Manchester Cathedral, particularly in the inside of the building, which hitherto has been much neglected.

The south porch internally has been for many years in a very unsatisfactory condition. By usage it has become the principal entrance, from the fact, perhaps, that owing to the exposed situation of the cathedral the west and north entrances when used prove too draughty and cold. Externally, this south porch has been restored, and is very ornamental in its design. The part adjoining is now in course of restoration, and will in a month or two be completed. The state of the interior has, therefore, forced itself upon the attention more than it has ever done before. The old lobby doors with their covering of dirty cloth, and the old lobby framing designed in the worst of all styles, form a wretched contrast to the rich stonework of the exterior, and, what perhaps is worse, have failed even with the additional protection of the heavy red curtains within to prevent the admission of draughts, that render the sittings near the entrances in the highest degree uncomfortable. The old gallery stairs placed near this entrance, and constructed in the same debased style as the lobby, but even less ecclesiastical in character, must have offended every eye that has looked upon them since the day of their erection half a century ago. The galleries are here so heavy and unsightly that we cannot help wondering at the indifference of those who have looked upon them Sunday after Sunday through so many years without making some attempt to improve their appearance. We have no doubt that the architect for the restorations, and, indeed, every other architect, would advocate their entire removal, and it is a pity that this cannot be effected; but there are almost insurmountable difficulties in the way, deficiency of accommodation without the chance of extension on the one hand, and private rights to pews and pew-ownerships that would require thousands of pounds to purchase on the other hand, so that the churchwardens have at present no alternative but to make the best they can of the existing galleries, either by alteration or by entire reconstruction.

To remove the objectionable features we have noticed, and to further secure the comfort of the congregation, the dean, canons, and churchwardens, conjointly have instructed their architect, Mr. Dawes, to prepare designs, and enter into contracts for the construction of new entrance porches, new stairs to gallery, and new gallery front to the westernmost bay on the south side. These designs are of an ornamental character, suited to the style and importance of the building, and when carried out will produce improvements both externally and internally. From the drawings and specifications already prepared, we gather the following description. There will be an inner and an outer porch arranged for the prevention of draughts, and constructed of wainscot oak, panelled with sunk tracery, and pierced where necessary for the admission of light. The glass for these open panels will be delicately stained and tinted, and will be fixed in lead quarries, arranged in patterns. The ceilings, also of oak, will be curved at the sides, and flat in the centre, and will be divided into panels by moulded ribs, carved at the intersections, or be ornamented with sunk tracery. The doors will be massive, and double hung, fitted with patent springs, and will therefore be self-closing. The upper portion of each door will be divided into four open panels, filled in the heads with tracery springing from shafts, with moulded caps, bands, and bases. The framing on each side of the doorways will be similarly treated, and the whole of the pierced work will be filled with stained glass, in lead quarries as before described.

The gallery front over the inner screen will have enriched panelling running along its length, in the form of an arcade, being divided by shafts surmounted by elaborate sunk tracery. Over this arcading there will be horizontal mouldings, with vine-leaves carved in the large hollow, and finished on the top by the projecting moulds of the bookboards. The newels will be moulded and carved; the larger one at the foot of the stairs will be surmounted by a massive lamp of polished brass, specially designed. The balusters will be of wrought iron, foliated and picked out in colour, and the hinges and handles of doors, and the lamps hanging from the porch ceilings, will all be of polished brass. The floors of the lobbies throughout will be laid with encaustic tiles.

In addition to these works, numbers of minor alterations and repairs have from week to week been carried out within the last few months, and others are still being executed. The interior of the building has been so neglected that a considerable sum is required to put it in anything like repair, independently of the thousands that will be absorbed in the permanent work of restoration. There can be little doubt that the wealthy churchmen of Manchester will interest themselves in the movement, and aid the vigorous action of the dean and canons and churchwardens, towards completiug the good work that has been begun.

ART MASTERS, DESIGNERS, AND THE PUBLIC TASTE.

SIR,—The subject of art education is probably as utterly distasteful to the majority of your readers as it certainly is to myself; yet they, no more than I, can decline its consideration without in a measure repudiating the important questions therein involved. "By what system of culture shall we best develop the æsthetic faculties and any power of art latent in the national mind," has everywhere been asked, and nowhere yet been answered. Thirty years' discussion has only robbed it of all novelty, to leave it as far from a satisfactory solution as the Parliamentary inquiry of 1836; and the failures of our national schools have become conspicuous in proportion to the magnitude of their experiments; whilst the public impatience and disgust are the more just, and the greater that it has not only been soundly rated for its encouragement of meretricious art, but that under promise of better it was induced to give up that it had, and to pay in advance for results which have never been, and never can be, under the existing organisations, realised.

With an internal acquaintance with the workings of the old "schools of design," I was one of the earliest opponents of many of the principles asserted by the new management of 1852, and in my connexion with the Department of Practical Art, I ever sacrificed my own interests to a frank,—too frank,—expression of my opinions. In looking to the past, over a period of fifteen to twenty years, and reviewing the many changes of system which have occurred, I may, perhaps, feel that my opposition was indiscreet and premature, and that had I trimmed my sails to the wind I might have helped to bring the ship to port, and have served better the cause I had at heart. It is, however, too late to discuss the Department's early errors or my own, and I refer to my connexion with them only as evidence that the subject upon which I presume to write is one that has engaged my thoughts and labours for many years.

Nor would I have it supposed that I am insensible to the many good things accomplished in the history of art by the South Kensington authorities. Nothing that I have written and nothing I may write will, I trust, lay me open to any such suspicion; for if their triumphs have sometimes been achieved at seemingly disproportionate cost, I bear in mind that they were also won in the face of no ordinary difficulties. It may be true that the arbitrary spirit in which the early management worked not only excluded impertinent interference, but also made the tender of active sympathy and aid impossible; and that subsequent years of dogmatism and despotism, which admitted no error, refused all counsel, and ostracised all opponents, did not tend either to conciliate the *paid* subordinates within their walls nor the *paying* public without. But when the worst is said, there still remains due to the indomitable will and indefatigable labours of the heads of the institution the credit of forming a museum unsurpassed in any country of the world.

Yet I have a charge against the Department, and a serious one too. It is this: it has utterly failed to do that which it was originally organised to do, and that which it might have done had it not autocratically repudiated its obligations, and resented every suggestion prompted by public spirit or individual good will, as though it concealed some fell purpose subversive of its rights, liberty, and life. It has utterly failed to elevate the taste of the masses, and almost as entirely failed to improve that of the middle classes. Briefly it has not promoted the cause of popular art. What has been done in that direction has been accomplished outside, by secessionists in spite of its influence, and by other agencies. But it has on the contrary systematically degraded the art-teacher before the public, the school committees, and in the estimation of the higher class of students from whom the best results might have been expected; and in so much it has in all cases seriously increased the difficulties of his position, and in many wholly annihilated his influence. In confirmation of my views as to the pernicious character of the system of "payment upon results," I cannot refrain from referring to two advertisements which have recently appeared in the *Builder*; for when the committee of the art-school of such a centre of manufactures as Sheffield makes the payment of a salary of 200*l.* to its headmaster conditional upon his agreement to decline all private teaching within a *circuit of thirty miles*; and Keighley, unconscious of any impropriety, makes it publicly known that its headmastership may be worth 250*l.* to an "active man," it will, I believe be readily conceded that the position of high-class art-teachers is as unsatisfactory as any system could well make it.

Yet, I would distinctly state that I have no sympathy with the so-called "finer susceptibilities" of the professional temperament. I believe that the "labourer is worthy of his hire," and no more, whether he be poet or shoeblack. But I have considerable regard for education and honesty, and I think they have claims upon our respect, which even business men can ill afford to repudiate. But to return.

If "the arts open great gates of a future, promising to make the world plastic, and to lift human life out of its beggary to a godlike ease and power," it is safe to assert that this blessed revolution will not be accomplished by unworthy agents, and that those who are already so far advanced in artistic culture as to be safe guides to this elysium of the future, are entitled to our consideration, at least, as gentlemen. The humblest workman is believed to have an interest in his labours beyond his daily wages; but the Government system of payment upon results is based upon the assumption that the art-master can be influenced alone by mercenary motives. Giving him no credit for devotion to his art, professional pride, or social ambition, it has destroyed all confidence between all parties, and made every contract a mean system of bargain and bartar—of speculation and gambling. The student, not without reason, suspects that his studies are shaped to produce the highest "results" to his teacher, who, in turn, is supposed to begrudge the time occupied by the unproductive element of his classes. The committee look jealously upon the master's private pupils, and the master feels that too large a proportion of the "results" of his teaching already flows into the hands of the committee. And as though this internecine conflict of interests were not sufficient to prove the rottenness of the system, a further antagonism is set up between the schools throughout the country by the invidious distinction drawn between them in the allotment of paltry "bonuses."

If, however, the position of the art-teacher is bad, that of the professional designer is still worse; for, during that protracted reign of terror which followed close upon the active promulgation of those principles of decorative design which limited nearly all ornament to the flat treatment, of highly conventionalised forms, our manufacturers found that in art, as thus ordered, a little more than enough was a great deal too much, and that the little really needed could be easily purchased, as wanted, from peripatetic artists. They, therefore, gradually reduced the number of their own staff from two or three to one, and thence to nothing; and when something like reaction set in, and more and better ornamentation was required, they had learned to believe that designers were costly luxuries, and that their places were already well and economically filled by trade apprentices, who had perhaps studied for a few months at the evening classes of the local art-schools.

Thus the arts of design and the designers of the nineteenth century, are reduced to the condition ascribed by Palissy to glass painting and painters of the sixteenth. "Both the art and the artist," says he, "are noble, but many amongst these, who are gentlemen by birth, would fain be plebeians in order to have money enough to pay their rent and taxes." Nor would I have it supposed that I am exaggerating facts, or making too general application of inference drawn from isolated cases. Mr. Muckley, with

twenty years' experience of the Manchester school, has replied to the reproach that he did not "turn out" designers, that students who had brain enough to design had enough to *avoid* the profession; and he might, I believe, have added that any school attempting to educate them would pauperise its head master.

To turn from the consideration of the artist to the art, I hold the fundamental error of the Government to have been that the system of education originally adopted by the Department of Science and Art, and with some modifications continued to the present time, was based upon the false and utterly unwarrantable assumption that the æsthetic faculties were already universally *active*, not only in the minds of the adult population, but also in the children of our primary schools; and that it was, therefore only necessary to enunciate in a few popular lectures, and upon the parish blackboard, the abstract principles of design, to inspire the minds of all comers, with an enthusiasm which would at once revolutionise the decorative industries of the country.

Now, the truth is, that sensibility to the beauties of nature and art comes late in life even to the wealthy and educated,—to *England's poor and ignorant of the nineteenth century it comes not at all!* The faculty is the result of observation, comparison, and reflection, and in the fashionable rush and crush of modern social life it is difficult, even with all the advantages of wealth and harmonious surroundings, to cultivate it,—*to the poor city born and city bred, it is impossible!* The great book of nature closed and sealed by the inexorable order of the task-master, the minds of the illiterate and indigent masses will assimilate such other food as is fed to them through the external senses. What this mainly is we well enough know,—the blasphemy and ribaldry of the streets and gin-palaces, the tinsel splendours of the lowest music-halls, and the naked ugliness of their own squalid homes; and as the eye will take in only that which it has the knowledge to see, and the ear carry only that which it has the power to understand, it will, I fear, be many years yet before the refinements of art, as taught in our national schools, will ameliorate their condition.

Whilst I write I have before me three large volumes, folio, of chromo-lithographs, which were ordered by the Lords of the Committee of Council on Education "to be executed by the best artists of any country," for the use of "the Schools of Art in the United Kingdom," and representing some of the principal works purchased for the South Kensington Museum. Amongst them I find a "rock-crystal ewer," 8½ in. high and 5½ in. in diameter: it cost 450*l.* I find that this precious "object is in the *debased style of art prevalent in the tenth century*," and that "*the patient labour needful to the delicate task of hollowing it*" is difficult to calculate. I find a small "silver casket of Limoges enamel," a sixteenth-century work, purchased for 1,000*l.*; and I find we are the fortunate possessors of twelve "Roundels" of Della Robbia ware, each 12½ in. in diameter, which cost 720*l.*

It is not my desire to revive the discussion as to the intrinsic value of these things. My purpose is simply to point out that the education of the masses would be more certainly promoted by a gratuitous distribution of penny dinner-plates of improved design in common delf as prizes in our national schools, than by the acquisition of any possible number of Della Robbia medallions at 60*l.* a-piece, Limoges enamels, or tenth-century rock-crystal vases, be the style of the latter ever so "*debased*," and though the "*patient labour*" expended in their production had been utterly beyond the power of Babbage himself, or his machine, to calculate. I have also before me five folio volumes of amateur etchings, executed by the students of the South Kensington Schools, also of objects in the national collection; and I do not hesitate to say, that if the same labour and money which they represent had been expended in the production of chromo-lithographs, of subjects in zoology and botany, for general circulation in our national schools, we should not then, as now, have expended much valuable time and money in vain. Then the Scriptural texts, which are now too often the only decoration of the whitened walls of the school-room, might have been displaced in favour of cheerful and instructive pictures; and the cant with which the minds of our national-school children have too long been poisoned might have given way to a healthy and curious inquiry into the wonders of creation, and to a juster sense of God's providence on earth. My mind reverts also to the experimental frescoes, *external* as well as internal, which have for years engaged the labours of masters and students at South Kensington, and I cannot help reflecting that, had but a small part of the money which they have absorbed been expended upon the naked walls of our national school-rooms in the form of cheap and cheerful papers, the national mind would have been more surely enriched at a far less cost to the national pocket.

The British School Society, organised in 1808, laboured for twenty-five years before it so far allayed the fears and dispelled the prejudices of the nation against primary education as to gain for itself the substantial recognition of the Government; and it has taken us forty years more of experiment and discussion to fully realise that national ruin is not the logical and inevitable outcome of national education. At this rate of progress it may still be the middle of the twentieth century before we understand that if this free instruction is to rescue the children of our indigent population from the demoralisation of prison life and the gutter, schoolrooms must be made at least as attractive as penitentiary wards, and more so than the crime-reeking courts and alleys of their familiar haunts. When this preliminary knowledge is acquired, I am not without hope that some of the simple principles of mental physiology and social progress may be so far understood by the art directors of the period, that a repetition of the errors into which the present generation has fallen will then be impossible.

C. HENRY WHITAKER.

*** We have allowed our correspondent to express himself unreservedly with a view to discussion.

KENSINGTON: THE PALACE AND GARDENS.

LONG reposing in a state of somnolence, this royal town has of late years awakened from its lethargy. The erection of two ranges of spacious detached mansions in Palace-gardens, first conferred upon it an aristocratic dignity; then the opening out the straits of the main street, and the erection of a handsome church; and, lastly, the removal of the old red brick building called Kensington House, and the substitution of a noble mansion within view of the old palace south front. This last will exhibit a frontage exceeding 200 ft., by a depth of nearly 100 ft., three stories high. There are four varied bows, with wings of one lofty story, connected by bowed corridors. The style, which is peculiarly light, may be termed Anglo-Romano. It is designed by Mr. Knowles, and carried out by Mr. Chappel. There is, however, one grievous blemish upon this otherwise fine position,—the old red brick palace garden wall, and the old gardener's house block out the view of the gardens for 250 ft.

Some fifteen years back the writer of this article urged in the *Builder* the demolition of the old barrack, which *was removed*, and the beautiful flower-walk continued to the gardener's house; but the park railing terminates there, and an obscene wall bounds the whole western side, reducing the apparent extent of those invaluable grounds, and shrouding their beauty from without. There is, however, an incentive to induce the continuation of the railing up to the old palace-gate entrance, in the first place for the embellishment of the Kensington High-street; and secondly (if not primarily), because the new mansion in course of erection belongs to Baron Grant, who munificently bestows on the public the inclosure of Leicester-square, to be further adorned also at his expense!

Those who remember the old wall along Piccadilly, and the ranger's house within, can appreciate the improvement of the railing, the apparent extension and sense of enlargement from both within and without. Thus we can imagine the effect of a boundary railing, to inclose the waste green on the west of the palace, as far as the palace garden boundaries, extending to the Bayswater-road, and encompassing the long six-acre pasture, which is out of bounds, and occult!

As to the old brick hamlets and cottages close to and north-west of the palace, which stood in 1691 when William III. bought Nottingham House (formerly the property of Sir Heneage Finch) from his son Daniel, the Earl of Nottingham, surely these old crazy tenements ought to be demolished: including the gardener's house, there are in all four of these quaint and antiquated lairs, besides two guard-lodges of somewhat more modern construction; and if these were all cleared away a scope of fifty acres might be added to the gardens, in a strip westward of the old palace, and extending from Kensington to Notting-hill-road.

King William III., and his Queen Mary after him, constantly resided and held courts here; George I. and George II. frequently used the palace, in alternation with Hampton Court; and Queen Caroline there luxuriated in the gardens which she had planted, as well as extensions and improvements made in the palace by Kent, the painter and architect.

But as a royal palace it has long been in disuse, and the paintings, gilding, and decorations are decaying and smouldering. Is it, then, worth while to restore or repair the old pile?

One grand desideratum might be gained by taking in those outlying grounds within the *enceinte* of the gardens,—a traverse road from Kensington to Bayswater. At present for two miles and a half (between Park-lane and Addison-road) there is but one tortuous, uphill, and inadequate thoroughfare, by Church-street and Silver-street to Notting-hill-gate; for although there is a noble causeway through Palace-gardens, it is restricted to the occupants of those fine mansions, having gates and lodges at either end. Now, a spacious road from the old palace-gate to Bayswater would be to the million of inhabitants south and north a boon of inestimable value; besides that it would confer benefits of a solid and valuable character upon the growing and flourishing business residents in both Kensington and Notting-hill.

Kensington as a royal and residential palace is defunct. Still, there is no position in London equal to it,—90 ft. above tidal level,—commanding a vista of forest a mile and a half in extent. No other city of the world can equal it. Only let the palace be erected a few hundred yards inward, towards the Round Pond, upon a plateau 10 ft. higher, and you have the most open healthy, picturesque, and convenient site for the abode of royalty,—ay, even for *levées*. It is surrounded by the aristocratic quarter of the town, and but two miles from Buckingham Palace and the Houses of Parliament: it would make an agreeable and healthy *séjour* for the British sovereign, either in summer or in winter; and the acquisition of the outlying borders as here designated thrown into park would more than compensate for say fifteen or twenty acres in a more central position, expropriated as the site of a truly royal palace.

QUONDAM.

CHINESE PROGRESS.

ACCORDING to official despatches, great improvement is being effected in many Chinese ports and cities. Thus with regard to the port of Chinkiang, we learn that its general condition is satisfactory. The marks of progress as regards material comfort throughout the place are very conspicuous. The houses are of a better appearance, and approach more nearly to the civilised idea of what such domiciles ought to be. The suburbs of Chinkiang are also increasing rapidly, especially in the direction of the British Concession. Land in favourable situations, it is stated, realises as much as 600*l.* an acre, and even 800*l.* have been known to be refused. It is further remarked that without the town farmhouses of substantial brick continue to be built, and replace the mud-plastered reed-hovels at first erected by the cultivators on their return to their ancestral soil. From Shanghai we also get news as to recent indications of advancing enterprise there. Telegraphic wires now intersect the settlements in various directions, and a scheme is also under consideration for facilitating passenger-traffic by means of a tramway, to be laid between the extreme limits of the American settlement of Hongkew and the native city. A concession has, moreover, been obtained for the construction of a public roadway, between Shanghai and Wusung, by a private company of shareholders, who have taken no particular pains to conceal their intention of eventually converting the line into a tram or railway for passenger and goods traffic. The Land Regulations, a code which has grown out of a series of modifications made from time to time as circumstances have rendered it necessary during the past thirty years, have latterly been found defective, and a recommendation has issued from a public meeting of the ratepayers that the whole code should be reformed. The consul at Shanghai also alludes to the Chinese arsenal at Kao-Chang-Thiao, an

important establishment, employing a number of foreign artificers and about 1,300 natives. Considering that it has only been in working order for about five years, a remarkable efficiency has been attained in the construction of vessels and the manufacture of arms and machinery. The Chinese Government has also made great improvements in lighting and buoying the approaches to the port of Shanghai. Amongst other improvements, new bar-marks have been substituted for old ones on the Yangtzse; a new lighthouse, with dioptric lights of the fourth order, has been opened at Wusung; and a buoy has been substituted for a blockhouse beacon, washed away at the entrance of the Yangtzse. There are many coal-mines in the district of Kelung, but the way they are worked is most primitive. In fact, it is stated that the so-called mining is little more than a scratching of the surface in a few places, the real coal-beds being left practically untouched. The ventilation of the mines is left to itself, and it is said that no system of pumping out the water is employed. Firedamp is unknown, but accidents frequently occur, in consequence of the side or roof falling in. The quality of the coal has been favourably reported upon by competent engineers; indeed, it is stated that Kelung coal, for household purposes, has no superior. In China there is a great disinclination to utilising machinery in the working of these mines, enterprise being greatly wanting in this respect.

CHURCH OF ST. MICHEL, TROY.

THE Church of St. Michel, Troy, is in the diocese of Llandaff, in the county of Monmouth, and within an easy walk of the town of that name. This church, though extremely simple and unpretending, is full of interest being like its greater neighbour, Tintern Abbey, of one period, and the same geometrical type. It consists, or did consist, of a western tower, with spire, nave, north and south aisles, south porch, and well-proportioned chancel, which has just been restored preparatory to the larger restoration of the body of the church now in contemplation, To give an idea of the simplicity of the church. it has no clearstory, but the nave and aisles are spanned in nearly one line of roof, which extends within 7 ft. or 8 ft. of the ground, giving a tent-like form to the structure. Notwithstanding this humility of conception, the arcades, chancel arch, and windows are all wrought in hard red sandstone, with great architectural propriety; the east window of the existing south aisle has a peculiar treatment consisting of three lights, with foliated heads, which stretch one above another in gradation, so that their crowning member forms a line parallel to the rake of the aisle-roof. The tower is of diminutive dimensions one face of its square measuring no more than 10 ft. 6 in. But, as if by way of correction, the upper belfry stage is made to corbel out rather wider to receive a small spire, which has shared the fate of the north aisle, or, as a legend has it —in its fall it carried the latter with it; in each face of the belfry stage is an effective two-light window, with trefoiled heads surmounted by a circle containing a graceful cinquefoil embraced by mouldings of two orders and a label.

But our attention at present is more particularly attracted to the chancel, which has lately been again devoted to its sacred purposes. It measures 28 ft. 10 in. long by 16 ft. 4 in. wide. In its south wall are two long single-light windows with trefoiled heads and perforated cusps, with a simple effective label opposite them. In the north wall are two similar ones, all excellent in expression, and well moulded. The "priest's doorway" is in admirable keeping with them, its arch having a cinquefoil cusping; but whether this is a close copy of an original, or the clever adaptation of a discarded window-head, is one of those many points which distracts archæologists.

The east window was unfortunately destroyed, but every care has been taken to replace it by one of three lights of an appropriate character, some portions of which are copied from fragments which were found near and about the church. It is filled with stained glass, the subject of which is our Lord's Ascension, admirably executed by Messrs. Ward & Hughes, of Frith-street.

It was found to be absolutely necessary to rebuild the chancel entirely, but the windows, doorway, and quoins were built in, stone for stone, when the opportunity was seized to line the internal walls with ashlar masonry of red and green colours from a neighbouring quarry of old red sandstone formation, on the Duke of Beaufort's estate.

The roof, being quite modern, has been replaced by a wagon-headed roof of open timbers, every third principal being moulded with carved bosses at the intersection of the moulded horizontal ribs; while the last bay over the sacrarium has been emphasised by a boarded ceiling, which it is hoped will be some day illuminated. The roof is covered with small green slates.

The floor is laid with encaustic tiles from Lugwardine, and appropriate seats have been provided for the choir, &c.; also a metal altar-rail. For convenience, a modern sacristy has been added to the north side of the chancel.

The architect is Mr. John Prichard, of Llandaff, diocesan architect. The clerk of the works is Mr. J. R. Banfield. The contractor, Mr. W. Simmons, of Monmouth, has carried out the work very substantially.

THE DESOLATION OF THE COLOSSEUM.

BESIDES such spots as the site for the Law Courts and Leicester-square (concerning which we now have some promise), there is yet another picture of solitude to survey, this time to the north of London. I refer to the building known as the Colosseum, in the Regent's Park, a perfect palace of desolation. Who cannot remember the delightful hours they have spent in this building, when some years ago it was employed as a literary and scientific institution? Is it possible that there is no purpose to which it can be applied? Many hints have been given and plans suggested for its utilisation, but year after year has passed away, and still the building remains absolutely rotting away for want of attention. It was proposed a year or two ago to make it a club for young men. The idea was a good one, as it was proposed to include baths, reading-rooms, billiard-rooms, and amusements of every description, with lodgings at a moderate rental. Then it has been spoken of as a new theatre (because we have not enough of them in London!). The building might possibly be made to answer as a public library and scientific institution. It contains lecture-rooms and theatres in abundance, and only requires a few energetic individuals to make it a successful undertaking once more. As it stands, it is a disgrace to the neighbourhood in particular, and to London in general.

Let us hope that ere many more years have elapsed, we may find this, as well as other desolate places, beyond the reach of indignant criticism. CHAS. FRED. FULLER.

LAND RECLAMATION.

SIR,—In reference to your article upon the above subject in last week's paper, it may be interesting to you and your readers to know that many thousands of acres have been reclaimed from the River Dee (Flintshire and Cheshire), and that the River Dee Company are now making an embankment several miles long to inclose another large plot of thousands of acres. Referring to the letter upon "Registering Steam-gauge," written by "J. W. Wilson," will Mr. Wilson state what its advantages are over the old-fashioned safety-valve inside the boiler, which it is impossible to tamper with without having the boiler empty? JOHN M. GIBSON.

NOTTINGHAM SCHOOL OF ART.

DISTRIBUTION OF PRIZES.

THE national medals, Queen's prizes, &c., awarded to this school of art by the Science and Art Department, for 1873, have been distributed by the Lord Bishop of Lincoln (Dr. Wordsworth). The room was well filled, a great number of ladies being present. The chair was occupied by Mr. Charles Seely, jun., late M.P. for Nottingham.

The Chairman congratulated the town and county of Nottingham on the very high position which this school of art had attained in the kingdom. He said that the Nottingham school had taken three more awards than any other school in the kingdom. South Kensington headed the schools, but that being in the metropolis, it could hardly be reckoned amongst the number. Now, Nottingham was by no means one of the largest towns in the kingdom. It might be that a deal of that success was owing to the fact that one of the great industries of Nottingham was benefited by the culture of art-training, and that might also be said of other towns; but his impression was, that it was due to one quality which Nottingham people possessed almost above that of any other place in the country—and that was a very high and energetic spirit.

The Bishop of Lincoln, before distributing the prizes, said he congratulated the meeting on the prosperity of their school of art, and let him tell them that under God they owed it in a great measure to the skill and intelligence of the head-master, Mr. Rawle, whose merits had met with a substantial recognition and appreciation from her Majesty's Government. Their head-master had also been the cause and instrument of the success of other schools of art, because it was well known that Mr. Rawle had produced a book on "Practical Plain Geometry," which was used in all schools of art in England. As to numbers, he believed that at the present time they stood at a lower figure than last year by sixty-six. He believed they now numbered about 438 students. There was a diminution; but still, let them remember, that relatively to the population, Nottingham stood at the head of all the towns in England. Numbers were not everything. They were not there to count numbers, but to estimate and weigh merits, and he maintained that if with diminished numbers they produced better results, the diminution was itself, in some respects, a proof of excellence. This was the case with Nottingham. What they had lost in quantity they had gained in quality. In the present year they numbered 104 prizes, the largest number they had ever had since the school existed, and it was with diminished numbers that they had achieved the greatest success. In the present year they numbered sixteen national and Queen's prizes, the largest number on the register: so they saw that with diminished numbers as to students, they had achieved greater victories as to proficiency. He believed that the highest prize which had been gained for architectural design had been awarded this year to a student of the Nottingham School,—Mr. Summers,—and he was thankful to say that it was the design of a church. Let them remember that the school of ecclesiastical architecture in England stood higher than at any period since the sixteenth century, and there must have been many distinguished competitors, and, therefore, the successful competitors must have had great merits. After referring to the architectural merits of Trinity and St. Thomas's Churches, his lordship expressed a hope that Nottingham churches would be built by Nottingham architects, and that the school might be fruitful in producing skilled architects, sculptors, and painters. Fifteen prizes, he believed, had been given for mural decoration, floral embellishments, and for oil-painting. With regard to mural decorations, we had a great deal to learn, as we stood far below other countries with regard to this matter. Fresco painting seemed to be extinct in England. We had some attempt in the Houses of Parliament, but with all our vaunted intelligence we were in a state of decline in this respect; and especially when we thought of the great achievements of painters in former days. We were much behind what we ought to be in this respect, and therefore he hailed with gladness the success of the students of Nottingham in this particular department. Why should not our walls be made eloquent, be made to stir up the people's courage and valour to do deeds of bravery in defence of their country? He could not understand why our walls should be so insignificant, and without utterance. He looked forward to the time when he should see the deeds of our ancestors recorded by pictorial art upon the walls of our council chambers, and where public assemblies were gathered together in order that they might learn to go and do likewise.

Mr. J. S. Rawle (head-master) offered his hearty congratulations to those students who had been successful in earning so many well-merited rewards for their hard and conscientious work. These congratulations were all the more hearty when he considered that the students in by far the great majority of instances, namely, those principally attending the evening classes, were engaged during the day-time in their various callings. He thought they should keep in view the primary object of schools of art, which was to make their artizans better art-workmen. They must recollect that art schools had only been on their trial in this country for some thirty years, whereas the French had shown their wisdom and foresight by establishing such schools more than a century

ago. They had also displayed similar wisdom in establishing art museums in the various centres of their art manufactures, a piece of foresight which he was thankful to say they had themselves commenced to see the wisdom of imitating. A great mistake was made in attempting to raise the standard of their art manufactures, without, at the same time, educating public taste. As long as people believed in the willow patterns on their plates, it was absurd to expect them to understand the beauty and refinement of the pattern of a majolica dish. Hence their schools became schools of art, the doors being open to the general public, that art education might become more widely diffused. That this had been a most wise proceeding was proved by the fact that it now paid a manufacturer to produce objects displaying the greatest amount of art-taste, rather than the monstrous pieces of ugliness in fashion some years ago.

Mr. W. G. Ward, referring to the museum scheme, said he could not see why they should not be allowed to have collections in the churches for such objects. The bargain made with the Corporation of Nottingham was that they should find 6,000*l.*, and that the people should find 6,000*l.* Now, they intended the people to find 12,000*l.* Mr. Ward then read out the following list of subscriptions:—Mr. Morley, 1,000*l.*; Messrs. A. & H. Heymann, 1,000*l.*; Messrs. Ward & Cope, 1,000*l.*; Mr. C. Seely, 250*l.*; Mr. W. Foster, 200*l.*; Mr. T. C. Hine, 100*l.*; Mr. James Carver, 50*l.*; and Mr. H. Cole, C.B., 20*l.*

THE LONDON SCHOOL BOARD.

At the last meeting of the Board, Mr. E. H. Currie brought up a report from the Works Committee, in which it was stated that on the 11th of June last the committee accepted a tender for the erection of the George-street (Marylebone) School. The site of the school was covered by old houses, and it was not expected that the foundations would have to be carried further than the ordinary depth. The removal of the buildings, however, revealed the existence of made-up ground and loose material, which had to be removed to obtain a proper foundation for the permanent building. The depths vary from 4 ft. 6 in. originally allowed for, to 6 ft. and 8 ft., and a maximum of 18 ft. in particular places. The work has been carefully measured, and the additional cost will amount to 447*l.* 16s. 8d. The committee recommended that this extra expenditure be sanctioned.

THE SANITARY INSPECTORS OF THE NORTHAMPTONSHIRE COMBINATION.

At the invitation of Mr. Haviland, the Medical Officer of Health of the Northamptonshire Combination of Sanitary Authorities, a meeting of the sanitary inspectors of the united area has been held in the county hall. The proceedings were opened by the inspectors being entertained to a luncheon by Mr. Haviland. They assembled afterwards, under his presidency, to consider the desirability of forming a Sanitary Inspectors' Association.

Mr. Haviland, in opening the proceedings, said it had long been his desire to bring them together. If they decided to form an association amongst themselves they could then determine the times and places of their meeting. What he wanted was, that when they did meet they should endeavour to improve each other by an interchange of experiences and opinions. Very often practices differed in the districts of different authorities over such a large area; and necessarily so, as the requirements of the districts might differ according to local circumstances. It was therefore impossible to lay down a rule for sanitary inspection in one district which might be perfectly applicable in another. As a medical officer, in studying the public health, he had to deal with different districts and different circumstances. Some districts had peculiarities of soil, or water-supply, or in population or manufacture, all of which had to be taken into consideration. Estimating the healthiness of a village or town by the length of life was a perfect fallacy. With regard to healthiness they would perhaps find persons saying, "We have not had a death in our parish for so many months." But without having deaths they could have illness. At Maidford, for instance, they had thirty-eight cases of typhoid fever brought on by the poisonous state of the wells. He mentioned Maidford because it seemed to be public property. He was very loth as a rule to speak of particular cases, but he had no objection to state this with regard to Maidford, because it had been bruited abroad by a foolish letter in the *Times* newspaper. Here was a particularly small village] of 363 inhabitants, with thirty-eight cases of typhoid fever, through a bad water-supply. Happily, through the skilfulness and great care of the medical man, Mr. Arthur Hill, there had not been one single case of death from that epidemic. When he examined the death-rate of Maidford, it was not raised by typhoid fever but by other diseases. Yet the death-rate at Maidford was greater in proportion than that of Manchester or Liverpool, or any of those large towns, although not one death was to be ascribed to typhoid. People went about obstructing sanitary work by theories about typhoid. They must simply take that as an illustration, painful as it was, because they did not know how soon that village might have a pure supply of water, and be perfectly free. At the conference in London to which he had referred, there was a suggestion as to whether sanitary authorities should hold sole control over the sanitary inspectors, or whether sanitary inspectors should be put more under the control of the medical officer. He stated that his experience of sixteen sanitary inspectors did not lead him to wish to alter his relations with them at all. So far as he was concerned, his wishes were always carried out. It was a question which they might discuss amongst themselves. But he should advise them at the outset to maintain their relations to the sanitary authority. They had more power, and they would find their medical officer would be able to assist them. With regard to business, he advised them never to let it accumulate. He advised prompt action, and cited Oundle as an instance, where, by promptitude in locking up a polluted well, they had stamped out typhoid fever. By following up cases that needed attention and promptitude in dealing with them, they made the sanitary authority respected. Pointing to the value of geology in various departments of their work, he alluded especially to its value in well-sinking. In the conclusion of his address, which is reported at some length in the local *Herald*, to which we have been indebted for this notice, Mr. Haviland asked their opinion as to the advisability of forming themselves into an association. Some conversation ensued, and ultimately it was decided that the Sanitary Inspectors of the Combination should form themselves into an association. The inspectors were desirous that Mr. Haviland should be the chairman of the association, but he wished them to appoint a chairman from their own number, and Mr. Sansom, of Towcester, was appointed chairman, and Mr. Gardner, of Northampton, hon. secretary. The meeting closed with a vote of thanks to Mr. Haviland.

THE ELEANOR CROSSES.

A writer in the *Art-Journal* has furnished an elaborate paper on the three remaining Eleanor crosses, from which I condense the following notes:—

Queen Eleanor, wife of Edward I., died November 28, 1290-1, at Hardeby, Notts, a hamlet in the parish of North Clifton, close by a ford of the river Trent; her remains were removed to London with considerable ceremony, the widowed monarch accompanying the funeral *cortége*; and at every spot where her body rested for a night, it is alleged that a memorial cross was erected, the first being at Hardeby.

The route was circuitous, to include certain religious houses; and the journey occupied twelve entire days, viz., from the 4th to the 17th of December.

No. 2, December 5. The first stage was to Lincoln; there is no vestige of this monument.

No. 3, December 6. Grantham, no remains.

No. 4, December 7. Stamford, ditto.

No. 5, December 8. Geddington, Northants; the site of a former royal palace. The cross still remains, ornament of an obscure village near Kettering, but prettily situated in a sort of Dukery.

No. 6, December 9. Northampton; this cross also remains.

No. 7, December 10. Stony Stratford, where the procession joined the main highway called Watling-street; no remains.

December 11. Woburn; this stage is very doubtful, there are no remains, but the dates appear to require it.

No. 8, December 12. Dunstable; no remains.

No. 9, December 13. St. Alban's; no remains.

No. 10, December 14. Waltham-cross; it still remains; a valuable relic, though poorly restored.

No. 11, December 15. Cheapside; the cross stood at the west end, near St. Paul's Cathedral. It was renewed 1486, rebuilt 1600, finally removed 1643.

No. 12, December 16. Westminster, at Charing-cross, named *Chère Reine*, from this circumstance; a "sporting" etymology.

December 17. The Abbey.

Many persons also include Tottenham, most erroneously: it has a cross, but not a true Eleanor cross. The parish of Tottenham High-cross, is so named from a cross that once surmounted its church tower. This place was an ancient look-out, a "tooting place," to guard against northern *caterans* and *reivers*, the Picts and Scots of south England; and, most singularly, the manor once belonged to the Baliols, who claimed the Scottish crown, while the stronghold is still called Bruce Castle.

A. Hall.

ENTERTAINMENT FOR LONDON.

We hear of a scheme to provide this on a large and comprehensive scale. A considerable plot of land close to the Westminster Palace Hotel has been bought or taken, and a committee is in course of formation to erect a sort of Crystal Palace, which is to include a first-rate club, the members of which will have the *entrée* to all the entertainments provided for the club. First-rate cooking, the best music, the best acting, and so forth are talked about, and the list of members is said to be already very numerous and influential.

THE ARCHITECTURAL ASSOCIATION OF IRELAND.

A general meeting was held on the 22nd ult., the president, Mr. J. J. O'Callaghan, in the chair. After the presentation of books to the library, and other routine business, Mr. T. H. Longfield (hon. sec.) read a paper on "Ornamental Design," to which we will refer hereafter. Mr. Mitchell proposed a vote of thanks, which Mr. T. Holbrook seconded, and it was carried unanimously.

MUNICIPAL GOVERNMENT OF THE METROPOLIS.

On Monday evening last, Mr. Arthur Arnold read a paper on this subject, at the rooms of the National Association for the Promotion of Social Science; Lord Napier and Ettrick presiding. After dwelling upon the great importance of the subject to all the inhabitants of the metropolis, the lecturer proceeded to point out the peculiar and anomalous condition of the government of London, the administration of which occupied the attention of no less than thirty-nine bodies. It was not a matter of surprise that but few persons could enumerate even the names of these bodies, and to explain the entire system of our local government would be a nearly impossible task. The Metropolitan Board of Works, the various vestries, the police and the police-courts, the Conservators of the River Thames, the School Board, and the gas and water companies had each a share in the government of the metropolis, and such a system as this could not fail to carry with it inefficiency, extravagance, jobbery, and waste. To secure efficiency, economy, and publicity it was essential to diminish the number of centres of control, and Mr. Arnold would suggest the substitution of those Parliamentary divisions which were proposed in the Bills introduced by Mr. Mill and Mr. Buxton, and which were now adopted in the elections to the School Board. It would be a cardinal point, however, in his system, to maintain in its entirety the dignity and importance of the ancient mayoralty of the city of London, and the lecturer would advise the extension of municipal government to the whole of the metropolis, the mode of election of councillors to be the same as that prevailing in all the boroughs of the kingdom. He had carefully watched the operation of the local government in Manchester, which city was divided into six townships, each having a town-hall, with a staff of officers for the execution of public works. To

a committee of the councillors was left the carrying out of the powers applying to objects which were paid for out of township rates, and his approval of this system was only qualified by the wish for a stronger central control to ensure greater uniformity in the execution of public works. With a government such as this we could fairly expect a more uniform observance of sanitary and other regulations, convenient constructions of new streets, and satisfactory provision of water and gas. At present there were hardly two of our thirty-nine governing bodies which performed any function in the same manner or at the same cost, and it was a very moderate calculation which placed the amount of 150,000*l.* a year as the saving which would be effected by establishing a corporation of London in place of the present system. If we could look forward to the time when a municipal government would control the supplies of gas and water, we should not only anticipate much larger reductions of expenditure, but expect a great improvement in the quality of these commodities. In conclusion, Mr. Arnold said it would be in accordance with his ideas that this corporation of London should perform all the functions of government which were not within the domain of State, and he was of opinion that the bad system from which we suffered would be much improved by a duly-elected corporation, and to citizens and ratepayers there was every inducement to press forward in this matter of reform, which was to them a subject of such great moral and pecuniary interest.

THE NATIONAL TRAINING SCHOOL OF MUSIC.

SIR,—I know that you, like me, are much interested in the successful foundation of the proposed Training School of Music, the building for which is making rapid progress in the Kensington-road, and I rely upon that in asking you to allow me to inquire what musical men are being consulted by the committee, and who will have the musical control? H.R.H. the Duke of Edinburgh takes great interest in the undertaking, Mr. Freake has acted very liberally in respect of the building, scholarships are promised in every direction, but I hear nothing of those on whom the success or otherwise of the institution must actually rest. A LOVER OF MUSIC.

THE ECONOMIC CONSUMPTION OF COAL.

THE Exhibition of Appliances for the Economic Consumption of Coal, which has been formed in the Peel Park, Salford, Manchester, by the Society for Promoting Scientific Industry, has been formally opened, but the success of the opening meeting was somewhat interfered with by the political excitement of the elections. Mr. Hugh Mason opened the Exhibition.

The machines, models, and other objects are arranged in a temporary structure of wood and glass. The main hall is 50 ft. wide, four times as long, and about 20 ft. high. At one end is a lesser building, 60 ft. by 20 ft., flanked on either side by other extensions of like character, but of minor length. To the right are three small annexes. Not far from these there is an enclosure of ground for such articles as could not be got into the building. The hall is simply decorated. The machines for the manufacture of improved fuel from peat are interesting. In one, Clayton & Howlett's, the peat is first cut up and pulverised, and then re-formed by pressure into blocks which have a greater specific gravity than coal. In Kidd's process the peat is dried or carbonised as a substitute for coke or charcoal. This machine not only produces a cheaper fuel, but effects a great saving of the heat by which the fuel is produced. The peat is deprived of its moisture, and when it leaves the machine it may be crumbled in the hand, like other kinds of charcoal. Peat charcoal is said to be peculiarly suited to the making and refining of iron, steel, and other metals, and its estimated cost to the manufacturer is six or seven times less than that of the charcoals in more general use. In Dauchell's machine there is another mode of charring, which has been applied, with every appearance of success, to Lancashire peat. Of coal-cutting machines, two or three are shown. In the main, they are all on the same principle: they drive a toothed wheel or circular saw applied horizontally to the surface of the wall of coal. Air compressors for the working of the coal-cutters are also shown, and in the two together we have the artificial miner of the future. On the left-hand side of the building are shown many inventions for the mechanical shifting of the grates of furnaces.

Several inventions for the more economical and, we trust, for the more effectual heating of churches and other large buildings may be mentioned.

One department of the Exhibition will have especial interest for the general public. It contains some dozens of stoves, ranges, and fireplaces, all intended to produce a maximum of heat with a minimum expenditure of coal. Messrs. Follows & Bates, with their gas-stoves and economisers made of fire-clay and the like, are represented. One contrivance is a small range, about 1 ft. square, which may be placed on a table, and there used for the cooking of a meal. Wood, or even paper, will serve as fuel; and the heat is so economised that a very small fire indeed will heat the oven and the stew-pan, and boil a kettle.

We may here remark that the "economic consumption of coal," and, above all, the wonderful mildness of the winter, are already bringing the coal interest to its senses. The coal trade is described as being "in a most feverish and unsettled state." The demand for house coal has been gradually declining, and at many of the collieries the output has been much reduced. The colliery owners have seen the necessity for a reduction in prices, the only perplexing point being how much they should drop. It is to be hoped both the fever and the drop will go on yet awhile.

WHO STOPS THE WAY?

SIR,—In a late number of the *Builder* a correspondent called the attention of its readers to the intention of the Metropolitan Board of Works to let the vacant land between Cannon-row and the Embankment for building. This ground is most especially required to connect two great thoroughfares in a continuous line from Chelsea to the City, as it would form the only straight thoroughfare in that direction. Therefore I hope some member of the Board will raise the question whether this short-sighted policy should be proceeded with, viz., the building on the only vacant ground that separates the Embankment from Victoria-street.

CONNECTIUS.

ROBBING EMPLOYERS.

AT nearly each Criminal Court that has sat for the counties of Middlesex, Surrey, and Kent, during the last twelve months, men employed by builders or builders' materials tradesmen have been charged and generally convicted of dishonesty. The crime has been of petty larceny and embezzlement; but these small thefts, continually practised, amount in the year to ruinous losses to employers.

There is too great a reason to believe that when builders' tradesmen are watchful and take "stock," in many instances the quantity of materials and goods sent out to building firms is deficient in weight, number, and measure, as compared with the delivery-books. In many instances goods to large amounts are delivered on the works in progress, and it is almost impracticable for foremen or clerks of the works to properly check the carmen, who care not whether their load is right or wrong.

The last case to hand came off at the Middlesex Sessions on January 28th, when John Nesson and Christopher Thomas Horne were indicted for stealing and receiving a quantity of glass, the property of Mr. Palmer, glass merchant, of 38, St. Martin's-lane.

The first-named prisoner was foreman cutter in Mr. Palmer's workshops, paid good wages, considered above suspicion, and had been for years in the firm. The time-table for January was for the prisoner and the workmen to come at eight o'clock in the morning, the clerk at nine, and Mr. Palmer, jun., to come when he liked; and up to the son's arrival the prisoner had sole charge of the business.

From private information given to the police, two detectives on the 7th of January kept watch on the prisoner and the premises, and they then saw the foreman leaving the warehouse with three pieces of glass. The prisoner was followed, and seen to speak to the other prisoner, Horne, a carriage-lamp maker, but finding that he was watched, the foreman started off at full speed, was caught, and taken to Bow-street, and charged with the theft. At Bow-street the prisoner admitted the glass was taken from Mr. Palmer's warehouse, but he protested his intention to pay for it.

The answer to the charge at the sessions was that the glass had been taken for the purpose of making experiments in embossing, and a foreman of glass-cutters in the service of the Inland Revenue, stated that he had known the prisoner a great many years as a man of ability in embossing glass, and of high respectability and honesty. The jury found Nesson guilty.

Horne was charged with receiving a square of plate-glass, well knowing it to have been stolen. This was also the property of Nesson's master, Mr. Palmer.

After Nesson had been taken into custody, it was proved that he had been in communication with Horne, the same person the detectives saw him speak to when he was followed and ran away. Other inquiries led to the discovery that Horne had sold a piece of valuable glass to a letter-writer in Long Acre, and this was proved to have been stolen off the prosecutor's premises.

Horne was found guilty, and sentenced to twelve months' imprisonment, with hard labour.

Mr. Palmer interceded very strongly for his late foreman, and succeeded in getting three months taken off his term of imprisonment.

CASE UNDER THE BUILDING ACT.

INSULATED BUILDINGS.

ON the 3rd of February, at the Lambeth Police-court, before Mr. G. Chance, Mr. H. Jarvis, District Surveyor of Camberwell, summoned Messrs. Jacobs, of East Dulwich Nursery, for having built a greenhouse 100 ft. long and 20 ft. wide, without having given him notice, as required by the Act of Parliament. The defendants urged that the greenhouse was exempt, as it was more than 100 ft. from the public road, and over 30 ft. from the grounds of adjoining owners.

Mr. Jarvis drew the attention of the magistrate to the clause in the Building Act, which sets forth that any building, in order to be exempt, must be 30 ft. from any other building, as well as 30 ft. from the grounds of any adjoining owners. In the present case, it was clearly proved that there were large greenhouses within 7 ft. of the building in question, and the magistrate ruled that it was not exempt, as it was clear to him that the "nearest buildings" meant any buildings whatsoever, and not those only on the grounds of adjoining owners.

ACCIDENTS.

Bury.—A frightful accident happened at a crowded meeting of Mr. Philips's supporters. The building gave way, and threw down the whole of the people. All the medical men in the town were summoned, and a large staff of police assisted in getting the dead and dying out of the ruins. On clearing the *débris* about forty persons were extricated. One was dead, and seven died immediately afterwards. Altogether, ten have been killed and about forty more or less seriously injured. The room was the top story of a building used as committee-rooms. The election agents were, it is said, warned of the insecure state of the building. Mr. Philips escaped down a fire-escape, and was uninjured.

York.—An accident has occurred in the Corn Exchange during an electioneering meeting. A large frame filled with plate-glass fell from its position in the roof of the building to the floor of the hall below. In its course it struck Mr. A. Walker, of the Railway Plant Works, on the back of his head, and rendered him insensible, and pieces of glass also cut and injured a number of other persons. The injured persons were carried from the hall. One of these received a severe blow on the back of the neck, and lies now in danger; another had his nose partially cut off, and received a severe cut upon his eyes; another sustained a cut across the bridge of the nose. The immediate cause of the glass falling was the violent pulling of a string attached to it for opening it as a ventilator.

CHURCH-BUILDING NEWS.

Shrewsbury.—The new chancel which has recently been added to St. Michael's Church, Castleforegate, has been opened for divine service. The original portion of the fabric was erected at a cost of 2,000*l.*, and was consecrated in 1830, as a chapel-of-ease to St. Mary's. The additions to the church consist of a sanctuary, built of Red-hill stone (unplastered), cased externally with Brosely light-brindled bricks, which match the rest of the church walling; it has a high-pitched open-timbered roof, covered with Ridge-hill (Staffordshire) tiles, and rises above the nave. In a niche over the east window outside, is a figure of St. Michael, carved in Bath stone, by Boulton, of Cheltenham. The dressed stonework to windows, buttresses, &c., is principally from Shelvoke quarry. Internally the Red-hill stone walling is relieved with yellow Grinshill; the encaustic tile floors are from Maw & Son. The east end of the nave, which has been converted into a chancel, is separated from the rest of the church by a low stone screen relieved with pierced panels, from the south side of which rises a stone pulpit having a carved cornice, &c., and traceried panels inlaid with different coloured marbles. The metal lectern is attached to the screen. Within the chancel, which is raised two steps above the nave, and is, including the sanctuary, 38 ft. long internally, are oak stalls for the clergy and choir. An improve-

ment has been effected by the removal of the south transept gallery (that on the north side having been taken down not very long prior to the commencement of the late alterations, when the organ was removed from the west end into the transept). There is a reredos of Caen stone, executed by Earp, with sculptured central group, in high relief, representing the Crucifixion, with the three Marys and St. John. Mr. W. Done did the lead glazing to the new windows, and the underground hot-air stoves for warming the nave and chancel are provided by Mr. W. Dodwell. The carving, except the reredos, is executed by Boulton. Mr. Haycock is the architect, and the work has been carried out by Messrs. Bowdler & Darlington, at a total outlay of about 800*l.*

Bilbrough.—After a restoration of the parish church of Bilbrough, the edifice has been re-opened for worship. It had for long been in a dilapidated condition, and, with the exception of the Fairfax chantry, has been entirely pulled down. It originally belonged to the Priory of Holy Trinity, York; but its dedication is doubtful. The old edifice had some slight remains of Norman work, as well as the Early English period. The east window was a three-light, with square head, and the chapel has a three-light four-centred arch at the east end, and side windows of two lights. This portion has been repaired and re-roofed; the two arches separating it from the church are pointed, of two orders, springing from piers with a centre shaft, and are low; and although the floor has been raised it is still 2 ft. lower than that of the new church. In 1867 the church was reseated, and some other temporary repairs made. The tower contained three bells, said to have been cast in York; and these have been rehung in the new tower. The new church is of greater width and height than the old, about the same length, with the tower at the north-west corner of the nave forming the porch; and there is also a vestry on the north side of the chancel. The style is Norman, treated very simply with square recessed window-jambs, and sunk cheveron work round the outside, and inside stone arches. The nave is seated to accommodate 170 adults and there are sittings in the chancel for sixteen more. The seats are all open, and have moulded and profiled ends of pitch pine. The passage floor and that of the chancel are laid with Maw's tiles; also, the Fairfax chapel. The nave is 54 ft. by 25 ft. wide, and is 33 ft. high to the apex of the roof, the walls being 16 ft. 6 in. The chancel is 24 ft. long by 16 ft., and 25 ft. high, the walls 14 ft. The tower is 14 ft. square, and to the apex of the pyramidal roof is 60 ft. high. The roofs are open-timbered and boarded, arched principals resting on stone corbels, and covered with Welch slate. The gables are surmounted by crosses. The churchyard has been extended and enclosed. The cost of the church has been defrayed by Mr. Fairfax, of Newton Kyne. The works have been performed by Messrs. Keswick, Cook, Hodgson, Carlill, and Gowland, of York. Mr. Fryer supplied the hot-air warming apparatus, and the whole has been carried out from designs and under the directions of Mr. Fowler Jones, architect, York. Mr. Geo. Harrison acted as clerk of the works.

Clippesby.—The church here has been re-opened. The restoration was commenced in 1868. The nave and chancel have been newly roofed, the interior reseated, the seats in the chancel in oak, and the nave in deal varnished; a carved pulpit in oak on stone base supplies the old one. The arch in the tower has been re-opened. The Norman doorway has been restored and oak door hung. Three memorial windows, including the east, have been filled in stained glass, also one in the nave; the other windows have been reglazed with cathedral glass. The porch has also been restored, the chancel laid with Minton tiles, with border, and the nave with Peek's tiles. Mr. J. B. Pearce, of Norwich, was the architect; and Mr. Wright, of the same place, and Mr. J. B. Parker, Upton, the builders.

Newport.—A numerous and influential vestry meeting has been held at Edgmond, to adopt plans for the restoration of the parish church, and to apply for a faculty to carry them out. The rector produced the plans which had been prepared by Mr. G. E. Street, R.A. The plans having been inspected, were adopted, and it was unanimously resolved to apply for a faculty to carry out the same. A large sum of money has already been promised for the restoration; and a parishioner is about to place a painted memorial window in the chancel, at a cost of 60*l.*

Twickenham.—A meeting of persons interested in the construction of a new church at Cambridge Park, Twickenham, has been held at the Castle Hotel, Richmond, Mr. Bristowe, Q.C., M.P., in the chair. Resolutions were passed approving of the scheme, and it was announced that nearly 3,000*l.* had already been collected or promised.

Woodbridge.—At a vestry meeting held in St. Mary's, the plans were exhibited of Mr. R. M. Phipson, diocesan architect, for the restoration and benching of St. Mary's Church, which had been submitted to and approved by the bishop of the diocese, and a faculty for carrying out the proposed works had been applied for. The chairman, referring to previous proceedings to obtain subscriptions, and to carry out the plans agreed to at a public meeting of the inhabitants, said that upwards of 1,200*l.* had been obtained. The Bishop was in favour of the galleries being entirely removed, but that was found to be impossible without enlarging the church, which could not be done without destroying its character. It was estimated that the present accommodation was 1,010, reckoning four in a pew. The restoration as proposed would accommodate 930, and the largest congregation attending had been counted at 850. Much time was consumed in discussing the details, and ultimately it was resolved:—"That this meeting approve of the plans produced, and also of the application to the Archdeacon's Court for a faculty to carry them out in their entirety, and that the thanks of the vestry be accorded to the committee for their services."

Gloucester.—Barnwood Church, which is dedicated to St. Lawrence, having undergone complete renovation, has been re-opened for divine service by the Bishop of the diocese. Barnwood is one of the most interesting churches formerly connected with the Abbey of Gloucester. Prior to the commencement of the work now completed, the disfigurements existing in and about the church were numerous. The tower-arch was entirely stopped up and an unsightly gallery extended across the west end of the nave; several modern windows disfigured the walls; pews of all sizes and heights existed; the floors, roofs, and walls, were more or less dilapidated; and a sort of general ruin seemed to pervade the whole place. The north aisle has now been re-roofed and the wall partly re-built, while the south wall has been taken down and re-erected. Some of the old windows have been replaced with new mullions of similar pattern. The flooring of the nave is laid with Maw's red, black, and white tiles, in pattern. The ancient font, decorated with carving, is placed at the west end of the north aisle, having been removed from its modern position near the belfry. The new pulpit is of stone, with panelled crosses in its fronts; and the pews throughout are replaced with open benches of varnished deal. The restoration of the chancel was undertaken by the Ecclesiastical Commissioners. The carved oak screen has been cleaned; the stone staircase to the rood-loft is reopened; the chancel steps are relaid with freestone, and the flooring with ornamental tiles; a new altar-rail of oak, resting on iron standards relieved with gold and colour, has been erected; there is a new roof of varnished timber; and open benches of oak, carved, have been placed in the chancel for the choir. This part of the work has been carried out under the direction of Mr. Ewan Christian, architect to the Commissioners. During the incumbency of the Rev. G. S. Escott, the sedilia, piscina, and credence were renewed, and these remain untouched, except so far as was necessary to bring them in keeping with other parts of the fabric. The roof of the nave, of late date, consists of oak beams and rafters divided into panels with tracery. Stained glass has been removed from some of the windows on the south side of the aisle, and a memorial window has been erected by Messrs. Hardman, of Birmingham. It consists of three subjects: in the centre is the Ascension of our Lord; above, the Angel announcing the Resurrection to Mary Magdalene and Mary the mother of James; beneath, the Saviour, saying to Mary, "Touch me not." The lichen-covered tower bears many a rude inscription. During the restoration, the five musical bells were taken down, and have been rehung, with a new treble, the gift of Col. Dowling, who is a liberal donor to the funds. The ancient bells all bear either the name or the initials of Abraham Rudhall, and the date 1698, showing that they were cast by the famous old bell-founder of Gloucester. A much-needed improvement has been made by the laying out of paths and the planting of trees in the churchyard. Messrs. Waller, the cathedral architects, were the architects of the restoration, and Mr. Albert Estcourt was the builder.

SCHOOL-BUILDING NEWS.

Dorrington.—The National Schools erected at the expense of Mrs. Hope Edwardes, of Netley Hall, have been opened. Mr. Edward Haycock was the architect, and from his designs the contract was entered into with Mr. Richard Jones, of Dorrington, builder, to erect the buildings at a cost of about 600*l.* The site also was given by Mrs. Hope Edwardes. The school consists of a room 30 ft. by 16 ft., fitted with convertible benches and desks, a porch with lavatory, and a class-room, &c. The roofs are open-timbered, and covered with Ridge-hill tiles. A convenient residence for the mistress is attached, the walls of which, as are those of the school, are built of red brick, relieved with bands of white and blue brick; cut blue red, and white bricks are also used in the arches over windows and doors externally. The painting, staining, and glazing, were done by Mr. Robinson, of Dorrington and Shrewsbury.

Haslington. — A new school chapel has been opened in Oakhanger Moss, Haslington. Mr. R. E. Speakman, of Doddington, prepared the plans for a school-chapel and school-teacher's house, and the contract of Mr. E. Dennel, of Haslington, was accepted for the building. This last was begun on the 13th of July of last year, and the opening was celebrated on New Year's Day. The school, which is rectangular in shape, is 30 ft. by 20 ft. and is built entirely of red brick and entered by a porch. The windows, which are of Hartley's patent glass, are Gothic. The ceiling is open plastered work, showing the rafters and transverse beams, which are of varnished pitch pine. The roof is of tile, and is surmounted at the east end by a turret containing a bell. The school-teacher's house is under the same roof. The school is furnished with Philips's desks, which can in a minute be converted either into a desk, table, or seat with a comfortable back. It is heated by Musgrave's patent slow combustion stove. When the school-room is used as a chapel, the desks are turned into seats; two large folding-doors are drawn aside, and a small chancel is at once disclosed to view. The east window, which is of three main lights, representing respectively the Baptism, Crucifixion, and Ascension of our Lord, is the work of Messrs. Wailes & Strang, Newcastle-upon-Tyne. Over these are three lesser lights, containing angels with scolls and the typical lamb. The flooring here is of encaustic tiles, the work of Messrs. T. & R. Boote, of Burslem.

Litchurch.—The day-school in Rutland-street, Pear Tree, has been formally opened. The school building consists of a large room, capable of accommodating, according to the space allowed by Government, from 150 to 180 children. There are, in addition, six class-rooms at the sides, one of which has been fitted up for infants. The whole building is well lighted and warmed, Perkins's patent heating apparatus having been fitted for the latter purpose. Up to the present time the amount expended upon the building is 840*l.*, and this has been incurred by the Osmaston-road Baptist Church; but that amount is exclusive of the land, which was given by the late Mr. Thomas Swingler.

Stapleton (*Shropshire*).—The school built in this parish was opened on Thursday, the 15th inst. The school-room, which provides for 45 children, has an open-timbered high-pitched roof; the walls are built of brick. Gringhill stone has been used for dressings to the windows and doors. A master's house adjoins the school. The roofs are covered with Staffordshire tiles. The work has been carried out by Mr. W. Jones, of Stapleton, under the direction of the architect, Mr. Haycock, of Shrewsbury. The total cost of the building, with fencing, boundary-walls, gates, &c., has been 502*l.*

Blakeney.—New National schools have been erected and opened here at a cost of over 1,000*l.*, the contract for building being 1,040*l.* Mr. Medland, of Gloucester, was the architect, and Messrs. Coleman Brothers, of Chaxhill, the builders. The structure is of native stone, relieved with Bath stone dressings, covered with Broseley tiles, surmounted with ornamental cross. The front room gives a clear space of 60 ft. by 22 ft., a second is 36 ft. by 18 ft., with porches, lavatories, &c. The interior walls are plaster, and the roof between the timbers is to match.

VARIORUM.

THE new number of the *Art-Journal* gives some instructive statistics as to shell-cameos:—"The value of the shell-cameos cut in Rome is estimated at about 8,000*l.* a year. Paris possesses only about a dozen houses where stone cameos are cut artistically. The rest of the workshops are occupied with shell-cameos, or false cameos, which are partly sold in France, and the rest sent to London. The stone cameos are worth from 5*l.* to 40*l.* each, according to workmanship; the shell-cameos from 1*l.* to 8*l.*, and the imitation cameos only from 1*s.* to 10*s.* Professedly there are only four or five cameo-cutters in our metropolis, but there are many workmen employed by shopkeepers and vendors. Some very beautiful gems are carved on shells by British workmen, but the price obtained will seldom repay the time, patience, and skilful labour required to finish a good article; hence the workman can earn more at other employments. The manufacture of shell-cameos has been carried on in Rome for upwards of forty years." "A quarter of a century ago the value of the shell-cameos which were cut in Paris amounted to about 40,000*l.*, and there were as many as 300 persons employed in the trade, earning wages ranging from 2*s.* 6*d.* to 1*l.* per day, according to their talent and skill. About half these cameos were sent to England to be mounted in Birmingham, and shipped back to France, or else sent to America and the colonies. The entered value of these shell-cameos at the Customs used to reach 8,000*l.* to 10,000*l.* a year; now it only amounts to about 4,000*l.* to 5,000*l.*——A paper in *Cassell's Magazine*, titled "Under our Feet," ends with this suggestive picture,—"Listen for a moment. Imagine that you are alone, and far away from daylight and from human help, and that through those hideous galleries comes a sound of rushing waters—the first indication of a thunderstorm up above. Eagerly you scramble for a place of safety, but ten thousand pipes, and spouts, and gulleys are pouring down 'storm-waters,' and in a very few seconds the seething flood is rising around you. Wildly you struggle on, but the waters rise with merciless rapidity, and threaten to carry you off your feet. Higher and higher they surge; your light is extinguished, and then comes the end. One wild shriek, one frantic struggle, and you are swept away through that awful gloom! This is not merely an imaginary case; only at the beginning of last August two poor fellows died this dreadful death, and several others but narrowly escaped."——In Cassell's new part of the *Household Guide* a caution is given about ivory:—"Articles made of ivory should on no account be exposed to heat or dryness. They should never be exposed to the direct rays of a hot sun, nor placed on the mantelshelf, as they are very apt to split in such circumstances. They also warp like wood when exposed to heat or a very dry air. It is said that when ivory becomes discoloured by being kept, the white colour it previously had may be restored by soaking the article in water, and then, when wet, exposing it to the action of light, while shut up in a well-closed glass case. When ivory has been long kept it diminishes, owing to the loss of the gelatine of which it is partly composed. This may be remedied by soaking the article in a solution of that substance. In consequence of ivory not always preserving the same length under all circumstances, it has been recommended that it be not employed in making very minute measurements."

Ventilation in Iceland.—A rather amusing incident occurred during the night. The bed I slept in, though exceedingly comfortable in itself, was at the far end of the little chamber tenanted by all the male members of the family, and towards midnight I was rather naturally aroused by an intense feeling of suffocation, owing to the presence of so many large men in such a little air-tight box. I remonstrated, and our host, with the utmost good nature, jumped out of bed, exclaiming, "I understand," and going up to one of the timbers which formed part of the supports of the wall, pulled out a cork from one of the knots, held it in his hand for about the space of half a minute, during which time I should think about six cubic inches of fresh air had come in; and then, shuddering horribly, he pulled a wry face, said we should catch our deaths of cold, hammered the cork in tight, and jumped back into bed.—*Six weeks in the Saddle.*

Miscellanea.

Antiquities in Athens. — Antiquarian research is actively pursued in Greece, and Athens will, before long, become the European centre for the study of that antiquity which has already rendered her name glorious. The correspondent of the *Levant Herald* says, the interesting and most extensive excavations carried on in every direction of the ancient city, the careful manner in which the noble relics of the Acropolis are being preserved, and the large public and private collections of antiquities which are being formed, will draw to Athens large numbers of scholars, who will find here inexhaustible food for their favourite studies. The importance which the Greek Museum of Antiquities has already acquired has decided the Imperial Academy of Vienna, on the proposal of Professor Coutze, to obtain copies of the Greek antiquities. That learned body has entrusted to Mr. A. Postolaca, curator of the Numismatical Museum of Athens, the work of collecting a complete set of new photographic representations of all statues, vases, inscriptions, and other ancient marbles in Athens. Mr. Postolaca computes that the album thus constituted will contain over 1,000 photographs.

St. Marie's (R.C.) Bells, Norfolk-row, Sheffield. — At another meeting of the committee, a report was handed in from Messrs. Hadfield & Son, architects, as to the cost of the new bells. Mr. Hadfield stated he had an interview with Mr. Stainbank, of the firm of Mears & Stainbank, at the bell foundry, Whitechapel, and that they had given in an estimate for seven bells, to complete a peal of eight, with the present bell of 20 cwt. as tenor, fixed complete, for the sum of 700*l.* Some discussion followed, and a resolution to the effect that an entirely new peal of eight bells, with a 25 cwt. tenor, be erected, the old bell to remain in the tower as a sanctus bell, was carried enthusiastically, and Messrs. Hadfield & Son were instructed to communicate accordingly with Messrs. Mears & Stainbank. We are informed that the estimate of these gentlemen has been accepted, and that the Duke of Norfolk has promised half the amount of the cost, which will be about 1,100*l.* The erection of the bells is to be completed by the 1st of July next.

The Ardwick and Ancoats Dispensary. At the formal opening of the new building of the Ardwick and Ancoats Dispensary, the Bishop of Manchester proposed a resolution expressing the hearty concurrence of the meeting in the proposed addition of hospital practice to the dispensary, and pledging it to assist to raise the necessary funds. The proposition was adopted, as was also the following:—

"That the adoption of the provident plan, whereby persons will be enabled by a small periodical payment to secure medical attendance in time of sickness, is a measure calculated in a high degree to benefit the working classes, and this meeting expresses its earnest approval of the scheme, and seeks to encourage the committee to persevere in their efforts, feeling assured that their labours will be crowned with success."

Metropolitan Drainage Works.—At the last meeting of the Metropolitan Board of Works, tenders were received for the construction of the Northern Low-level Sewer between Battersea Bridge and Cremorne Pumping Station, and for the setting of the four new boilers at the Crossness Pumping Station, already ordered to be constructed. The first ranged from 23,830*l.* to 17,442*l.*; and the second from 3,160*l.* to 2,238*l.* The tenders were referred to a committee of the whole house, who, in accordance with the usual practice, recommended the acceptance of the lowest in amount, namely, that of Mr. Joseph Chapple, at 17,442*l.*, for the Pumping Station, and that of Messrs. Waterson & Company, at 2,238*l.*, for the Crossness boilers, subject to the usual inquiries. The recommendation was ordered to be acted upon.

Public Park and Recreation Ground for Tooting.—The old gravel pits and belts of furze on the west side of Tooting-common are being cleared away, and the land is to be laid out as a public park and playground for the inhabitants of Streatham and Tooting. The excavation and conversion of the common into a park is undertaken by the Board of Works, who have purchased the manorial rights, and arranged with the commoners having rights to pasturage and other privileges. The other portion of the common, about which there has been very extensive litigation between the lord of the manor and the commoners is to remain in its present state.

Thames Embankment Boundaries. — A plan was submitted by the Works Committee at the last meeting of the Metropolitan Board of Works, showing the proposed boundary line of the Victoria Embankment and New Bridge-street, Blackfriars. They had had under consideration the report by the Board, signifying their wish to construct an appropriate resting-place where the Victoria Embankment joins New Bridge-street, Blackfriars, and inquiring as to the line of boundary to be determined on between the Board and the Commissioners. Ultimately a line of boundary had been agreed upon for the end of the balustrade of the Embankment wall to the point on the opposite side of the roadway, where the Board's vaults terminated as delineated on a plan.

Miss Harrison's Park, Sheffield. — A meeting of the park and general purposes committee has been held at the residence of the late Miss Harrison, for the purpose of making the necessary arrangements for the opening of the park. The committee made a minute inspection of the ground and house, and several suggestions were made for the erection of lodges and entrances. It was resolved to communicate with Mr. Marnock, of London, the landscape gardener, with the view of engaging him to lay out the grounds.

"Good Dog."—Miss Louisa Swift, whose name as an artist has been heard of before to-day, has painted a remarkably good picture of a mastiff, life size. The head is singularly powerful and life-like. If the back-ground and accessories be completed as successfully as the main subject of the picture, it will, doubtless command attention in whatever exhibition it may be sent to. Very clever ladies are Mrs. Swift and her three daughters,—one of them now Madame Bischop.

An Old Painter.—On the 29th of January, at 11, Kent-terrace, Regent's-park, in the 96th year of his age, of acute bronchitis, died Mr. John Christian Schetky, Marine Painter in Ordinary to their Majesties George IV., William IV., and Queen Victoria, and formerly Professor of Drawing to the Military and Naval Colleges at Marlow, Portsmouth, and Addiscombe. The interment took place at Paddington Cemetery, Willesden-lane, on Thursday, the 5th inst.

Wet Dock for Ayr Harbour.—It is understood that the trustees of Ayr Harbour have all but completed arrangements for construction of a dock on the north side of the harbour. Mr. Baird, of Cambusdoon, has generously agreed to advance the trustees for this purpose the sum of 120,000*l.*, and the Glasgow and South-Western Railway some time ago voted the liberal donation of 10,000*l.* for the same purpose.

Society for the Encouragement of the Fine Arts.—On Thurday evening in last week an interesting lecture, the opening one of the session, was delivered before the Society for the Encouragement of the Fine Arts, Conduit-street, by Mr. John Saddler, the subject being "Line Engraving." Mr. John Warwick occupied the chair. A discussion followed.

Paddington Baths and Wash-houses.—Mr. J. Humfress "is disappointed to find his name omitted" in the account we gave of the Paddington Baths, as he has "the contract for the gasfitting." When he had executed the gasfittings would probably have been time enough to mention the circumstance, but we accord him his request.

The Royal Archæological Institute of Great Britain and Ireland, having fixed to hold their annual meeting in the city of Ripon, a meeting has been held, for the purpose of appointing a local committee to make all necessary arrangements. The Marquis of Ripon, K.G., presided.

Royal Academy.—At the last meeting of the Council of the Academy, Mr. Millais in the chair, Mr. J. L. Pearson, architect, was elected an Associate. Mr. Storey went to the ballot with him. Mr. Waterhouse's name was in the first list.

Royal Institution. — The discourse on Friday next, February 13th, will be given by Dr. Doran, F.S.A., on "The Opponents of Shakspeare," at nine p.m.

Hungerford.—The Congregational Church here has been re-opened. The alterations are extensive, and have been devised and carried out under the direction of the Rev. B. Crowther.

TENDERS

For sewers and other works, Chelsea, for the Metropolitan Board of Works:—

Moore & Co.	£26,000	0	0
Webster	24,000	0	0
Neave & Son	23,839	0	0
Pearson	22,300	0	0
Furness & Co.	19,900	0	0
Noel & Robson	18,950	0	0
J. & S. Williams	18,600	0	0
Chappell (accepted)	17,442	0	0

For fixing four new boilers, Crossness Pumping Station, Kent, for the Metropolitan Board of Works:—

J. & S. Williams	£3,160	0	0
Webster	3,000	0	0
Noel & Robson	2,800	0	0
Crockett	2,776	0	0
Pearson	2,555	12	9
Waterson (accepted)	2,538	0	0

Accepted for new schools for the Caldbeck School Board, Cumberland. Mr. Stephen Shaw, architect. Quantities supplied:—

Hesket New Market School:—

Masonry and Drainage.

Butterworth	£689	13	0

Carpenter and Joiner.

Atkinson	218	0	0

Slating.

Bailey	85	12	8

Plastering.

Messrs. Hampson	19	10	0

Plumbing, Painting, and Glazing.

Smith	39	3	0

Fellside School:—

Masonry and Drainage.

Butterworth	521	6	0

Carpenter and Joiner.

Bell	185	0	0

Slater.

Bailey	80	1	2

Plastering.

Messrs. Hampson	17	9	4

Plumbing, Painting, and Glazing.

Smith	33	16	0

Caldbeck School:—

Masonry and Drainage.

Forsyth	440	0	0

Carpenter and Joiner.

Atkinson	126	2	8½

Slating.

Bailey	49	15	0

Plastering.

Hampson	9	5	0

Plumbing, Painting, and Glazing.

Smith	22	4	0

Hatcliffe School:—

Masonry and Slating.

Hornsby	97	0	0

Carpenter and Joiner.

Harding	30	0	0

Plastering.

Messrs. Hampson	9	11	10

Plumbing, Painting, and Glazing.

Smith	12	14	0

For public elementary schools, East Ham, Essex. Mr. Dennison, architect. Quantities by Mr. Barnett:—

Carter	£5,870	0	0
Ashmole	5,490	0	0
Rivett	5,193	0	0
Downs	4,890	0	0
King & Son	4,700	0	0
Adamson	4,698	0	0
Ennor	4,667	0	0
Arber	4,650	0	0
Perry & Co.	4,578	0	0
Barnes	4,500	0	0
Boyce	4,265	0	0
Sheffield	4,265	0	0

For alterations to eleven houses, Well-street, Hackney, for Messrs. Smith & Gale. Mr. F. Boreham, architect:—

Judd	£1,157	0	0
Bailey & Smith	1,001	0	0
Pavitt	989	0	0
Turner	766	10	0
Blackmore & Morley (accepted)	725	0	0
Lancaster (withdrawn)	650	0	0

For new farm-house, homestead, and lodge-buildings, at Pertenhall, Beds, on the estate of the Corpus Christi College, Oxford. Mr. J. T. Bottle, architect. Quantities supplied:—

Jacobs	£7,980	0	0
Sharp & Rowling	7,845	0	0
Saint & Bunting	7,456	0	0
Lord	7,430	0	0
Claridge	7,380	0	0
Orchard	7,379	0	0
Darling	7,353	0	0
Waterson & Co.	7,339	0	0
Dover, Son, & Co.	7,217	0	0
Kimberley	7,205	0	0
Page & Allen	7,168	19	8
S. & W. Pattinson	7,151	0	0
Youngs	7,133	9	0
Cornish	7,100	16	8
Hobson & Taylor	7,109	0	0
Chappell	7,100	0	0
Haynes	7,073	0	0
Wagner	7,045	0	0
Story	6,924	12	8
Hubbard	6,896	0	0
Coles	6,523	0	0
Watkin	6,352	0	0
Chinnock	6,300	0	0
Treson	6,240	8	0
Smith & Son	6,161	0	0

For the erection of a dwelling-house, Watford, Herts, for Colonel Robertson. Messrs. Smith & Austin, architects:—

Cockell & Co.	£700	0	0
Foreman	675	0	0
Jopling & Co.	660	0	0
Chinnock	650	0	0
Clifford & Gough	633	0	0
Allen	632	0	0
Waterman (accepted)	608	0	0
Andrews & Son	607	0	0
Bulford	598	0	0

For a block of sixty-four offices in Telegraph-street, Moorgate-street, London, E.C. Mr. Edward Browning, architect. Quantities supplied:—

Thompson	£9,867	0	0
Browne & Robinson	9,477	0	0
Killby (accepted)	8,960	0	0
Colls	8,878	0	0
Perry & Co.	8,876	0	0

For alterations and additions to the Cook Tavern, St. Martin's-court, Ludgate-hill, for Mr. George Gabb. Mr. H. G. Gribble, architect:—

Lidstone	£1,565	14	0
Sharpington & Cole	1,455	0	0
Hunt (accepted)*	1,271	0	0

* Amended tender.

For reconstructing No. 5, Old Jewry, for Mrs. Charlotte Smith. Messrs. Bird & Walters, architects:—

Bottings	£1,137	0	0
Harris & Son	1,089	0	0
Thompson & Smith	1,057	0	0
Mark	1,048	0	0
Brown	896	0	0
Newman & Mann	876	0	0
Williams & Son	867	0	0
McLachlan	774	0	0

For rebuilding Nos. 147 and 148, Leadenhall-street, for Mr. C. Skipper. Mr. E. N. Clifton, architect:—

Simpson	£25,577	0	0
Jackson & Shaw	25,330	0	0
Ashby & Sons	25,220	0	0
Conder	24,720	0	0
Smith & Co.	23,790	0	0
Holland & Hannen	23,510	0	0
Ashby & Horner	22,500	0	0
Brass	22,109	0	0

For public-house, corner of Queen-street, Finsbury, for Mr. Alabaster. Quantities supplied by Messrs. Hammack & Lambert:—

F. & F. J. Wood	£3,840	0	0
Hearle	3,755	0	0
Colls	3,669	0	0
Newman & Mann	3,556	0	0
Smith	3,500	0	0
Wicks, Bangs, & Co.	3,450	0	0
Browne & Robinson	3,375	0	0

For new drainage and other sanitary works at Middleton Park, near Bicester, for Lord Jersey. Mr. W. Eversden, surveyor:—

Castle & Co.	£1,508	0	0
J. & T. Davis (accepted)	1,405	0	0

For the erection of buildings, Norton Folgate, London. First contract. Mr. Charles Fowler, architect. Quantities by Mr. H. Lovegrove:—

Glaskin	£1,500	0	0
Hearle	1,492	0	0
Kiddle & Son	1,458	0	0
Killby	1,447	0	0
Conder	1,447	0	0
Wall	1,407	0	0
Crabb	1,300	0	0

TO CORRESPONDENTS.

J. R.—W. C. H.—M. F.—K. D.—E. T.—S. S.—W. H. W.—W. C. T. M. & T.—D.—S. & A.—J. O.—P. V.—C. D.—L. Bros.—Y. & Co.—S. W.—J. C.—C. B.—H. J.—G. T. C.—W. G. S.—H. L.—Mrs. A. L. (card did not reach us until the lecture had been delivered.—J. A. W. (next week)—A. H. (next week).—H. J. S. (our correspondent has evidently been ill-treated, but we fear he has no legal remedy).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

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